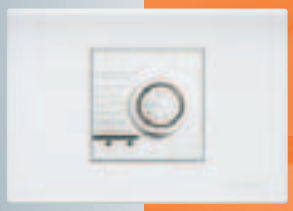
bticino

MY HOME

Temperature control



TECHNICAL GUIDE 04

MENU' PRINCIPALE
OK
CLEAR

CONTENTS

General features

MY HOME temperature control	4
Zone temperature control	6
The advantages of MY HOME temperature control	10
System examples	12
The solution for all types of system	15
Hydraulic system design	16
Application devices	19

Technical features

Control unit	20
Sensor	22
2-relay actuator	23
4-relay actuator	24
Power supply	25
BUS wire	25
Pull-out terminals	25

Configuration

Device configuration	26
Standard configuration	28
Quick configuration	41

Application examples

4-zone large house with heating using radiators	44
4-zone large house with heating using 2 pumps with solenoid valves without limit switches, and radiators.	46
6-zone large house with heating using radiant panels	48
8-zone large house with heating using radiators and fan-coil cooling	50
Commercial sector, 12 zones, with fan-coil with two tubes and three speeds	54

General installation rules

Preparing the building	58
Maximum number of devices	59
Extensive systems	60
Combining with other functions	61
Control unit	62
Sensor	63
Actuators	64

Catalogue **66**

MY HOME temperature control
The ideal temperature, when and where you want

THE KEY ADVANTAGES OF ZONE TEMPERATURE CONTROL

- **COMFORT**
  A different temperature profile in every room
- **UP TO 30% SAVING**
  Depending on the type of system saving on consumption pays for the system in a few years

NEW

TEMPERATURE CONTROL UNIT

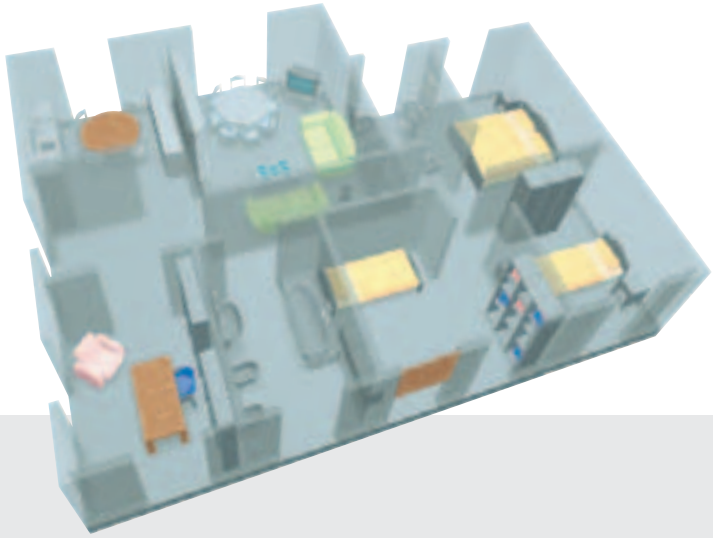
WITH ALL THE ADVANTAGES OF A MY HOME SOLUTION

- FLEXIBILITY
- SIMPLICITY
- FITTING IN
- SECURITY

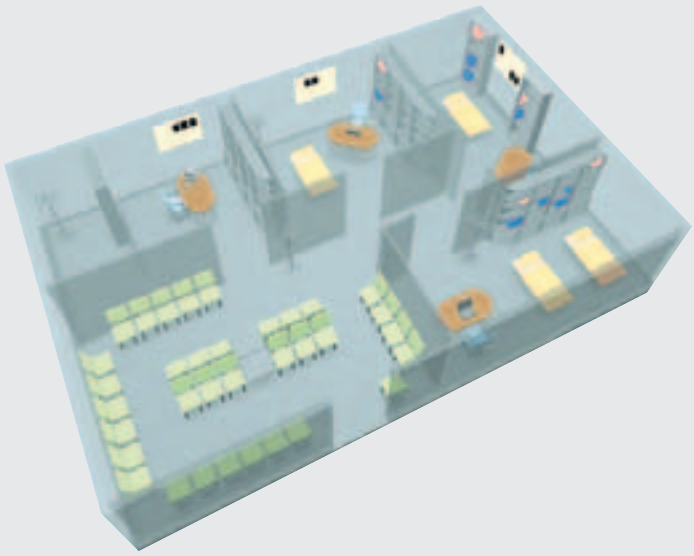
MY HOME

The ideal solution for every application

- TERRACED HOUSE
- LARGE HOME



- SMALL COMMERCIAL SECTOR
- OFFICE

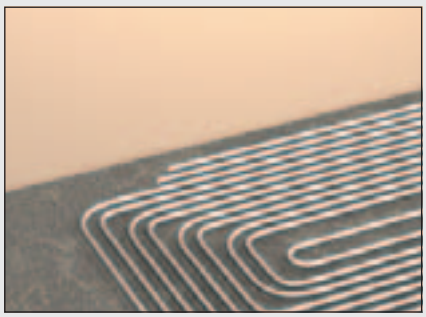


...and for all types of system

RADIATORS

FAN-COIL

RADIANT PANELS



Zone temperature control
The guarantee of comfort...

THE TEMPERATURE PROFILE YOU WANT

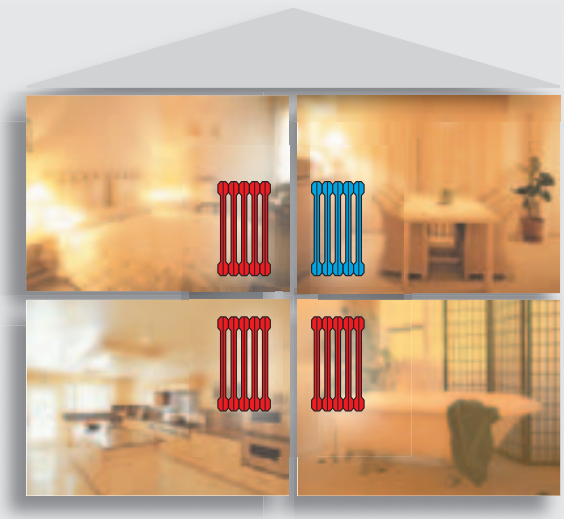
- For every room
- For every day of the week

From the morning...

7:00

22°C in the bedroom

19°C in the kitchen



16°C in the living room

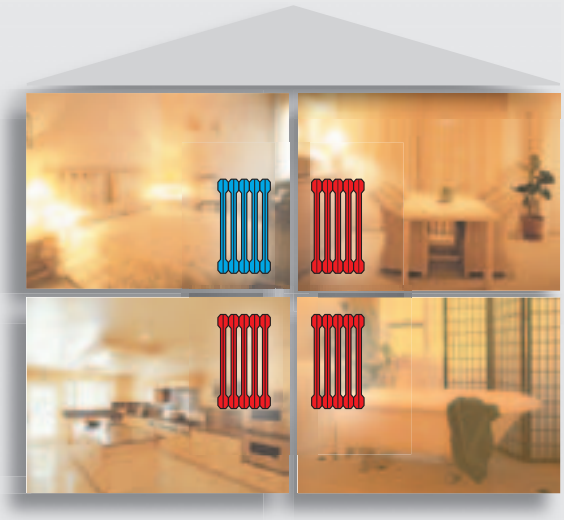
22°C in the bathroom

... to the evening

20:00

18°C in the bedroom

21°C in the kitchen



22°C in the living room

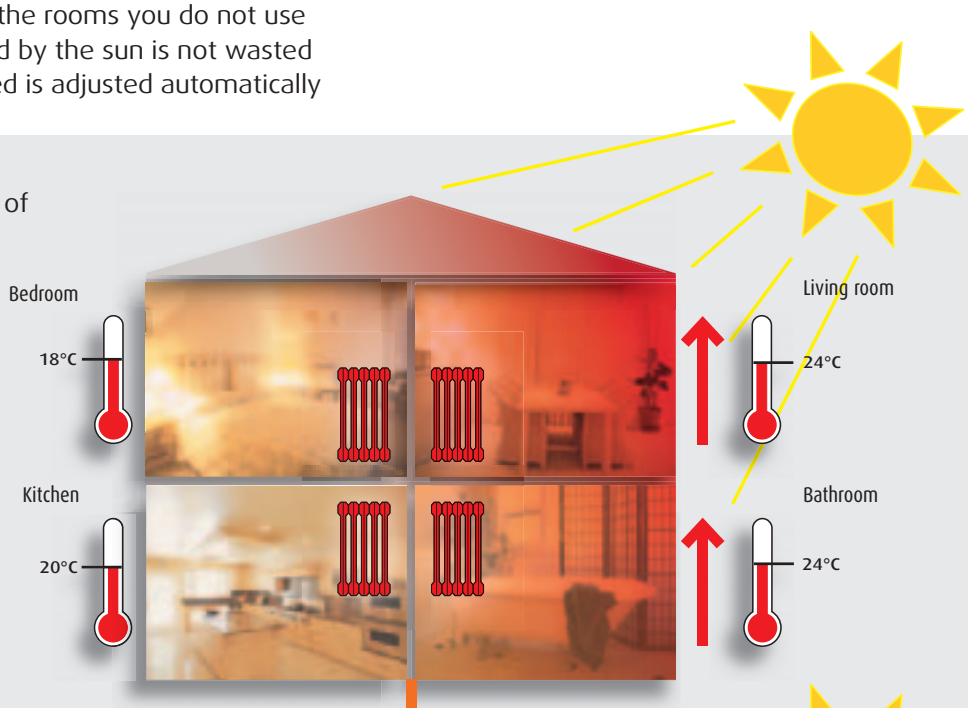
22°C in the bathroom

...and saving

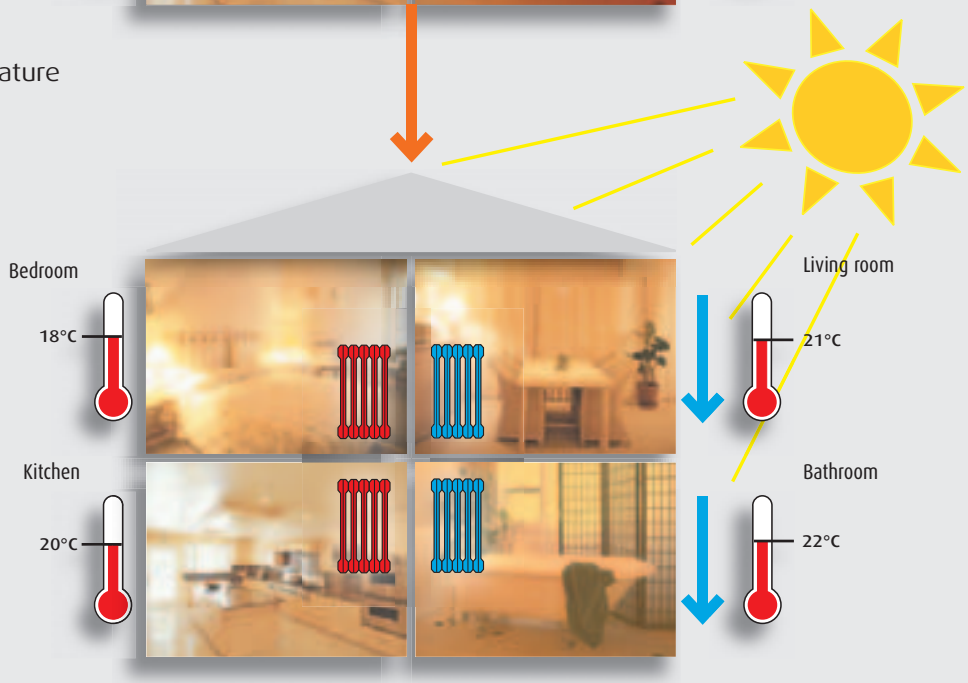
UP TO 30% SAVING ON CONSUMPTION

- You can turn off the rooms you do not use
- The heat supplied by the sun is not wasted
- The fan-coil speed is adjusted automatically

The sun heats some of the house zones...



... My Home Temperature control restores the correct temperature



Zone temperature control
Traditional solution

- TOO MANY TIMER THERMOSTATS TO PROGRAM
- YOU DO NOT CONTROL THE WHOLE SYSTEM
- CANNOT BE USED IN LARGE SYSTEMS

Zone temperature control MY HOME solution

- JUST ONE CONTROLLER TO PROGRAM
- EFFECTIVE CONTROL OF THE WHOLE SYSTEM
- ALSO SUITABLE FOR LARGE SYSTEMS

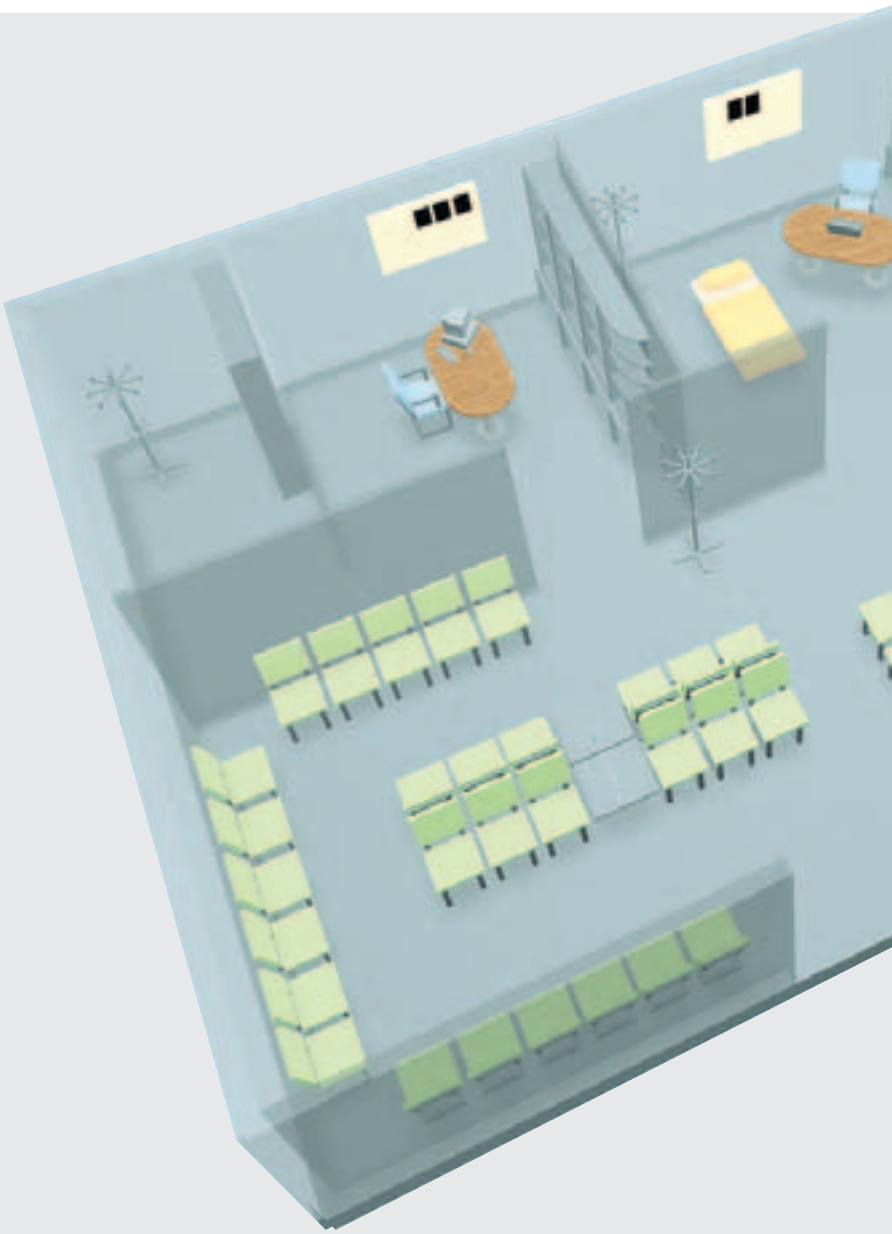
The advantages of MY HOME temperature control

SAVING AND COMFORT

- zone temperature control allows different profiles for each room and for every day of the week.
- depending on the type of system can save up to 30%.

REMOTE CONTROL VIA THE MY HOME PORTAL

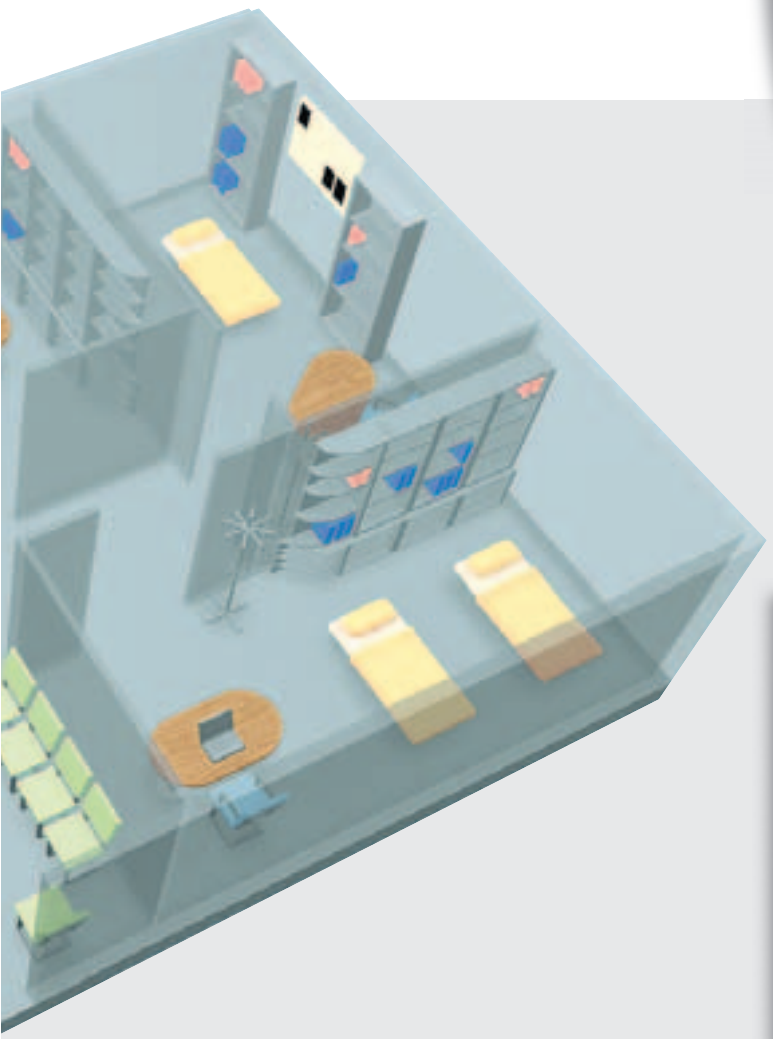
SET UP FOR THE REMOTE MANAGEMENT AND REMOTE ASSISTANCE SERVICE



LOCAL CONTROL

In each room there is a sensor to measure the temperature which can also control the system simply:

- ± 3°C with respect to the set-point
- switch off the system
- set the antifrost



CENTRALISED CONTROL OF THE WHOLE SYSTEM (UP TO 99 ZONES)

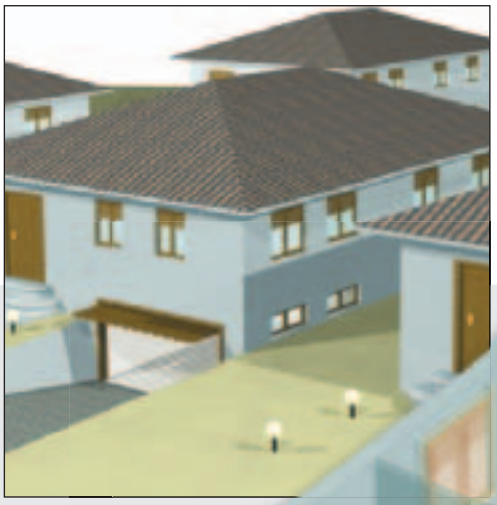
Thanks to the temperature control unit the whole system can be controlled with a single command.
It is like having 99 timer thermostats in a single device.

JUST ONE CONTROLLER TO PROGRAM

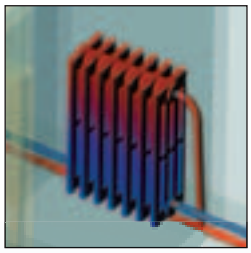
The temperature control unit allows quick programming thanks to its large display, navigation of the simplified menu and keypad like that of a mobile phone.

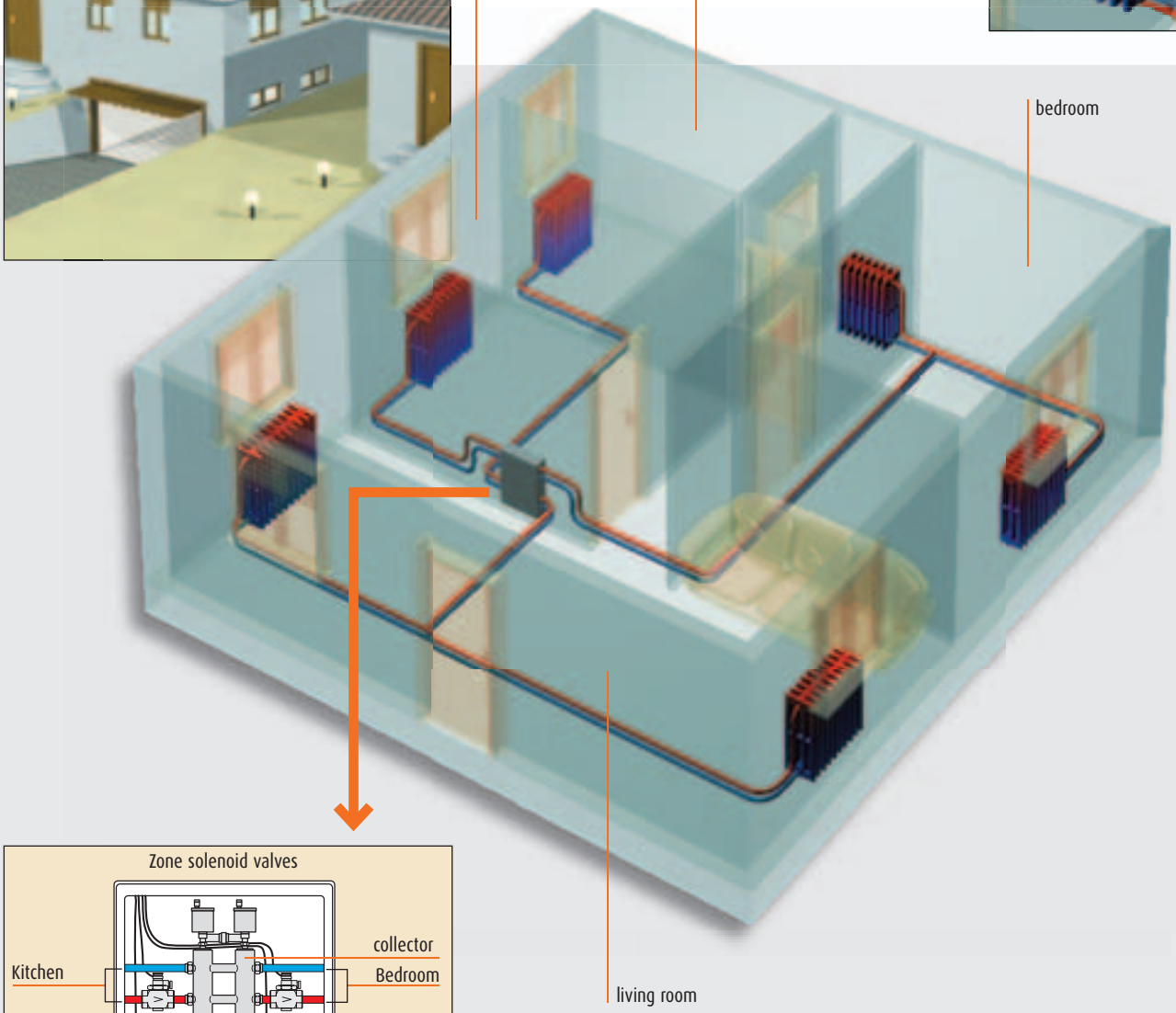
Heating system examples

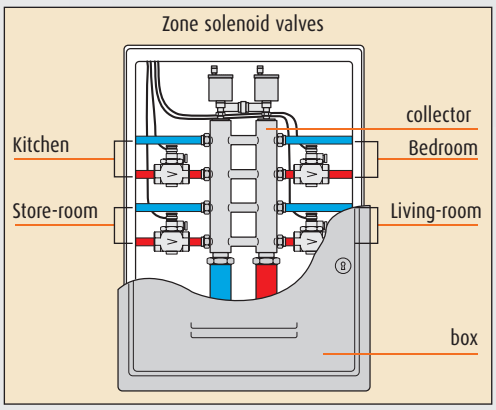
TERRACED HOUSE WITH RADIATOR HEATING



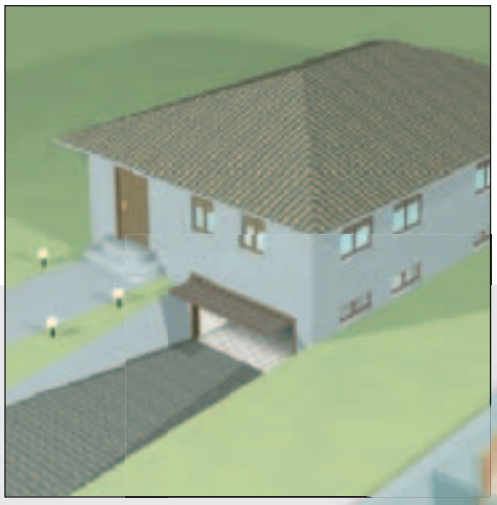
■ TRADITIONAL RADIATOR



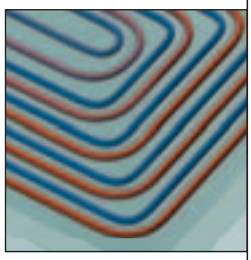


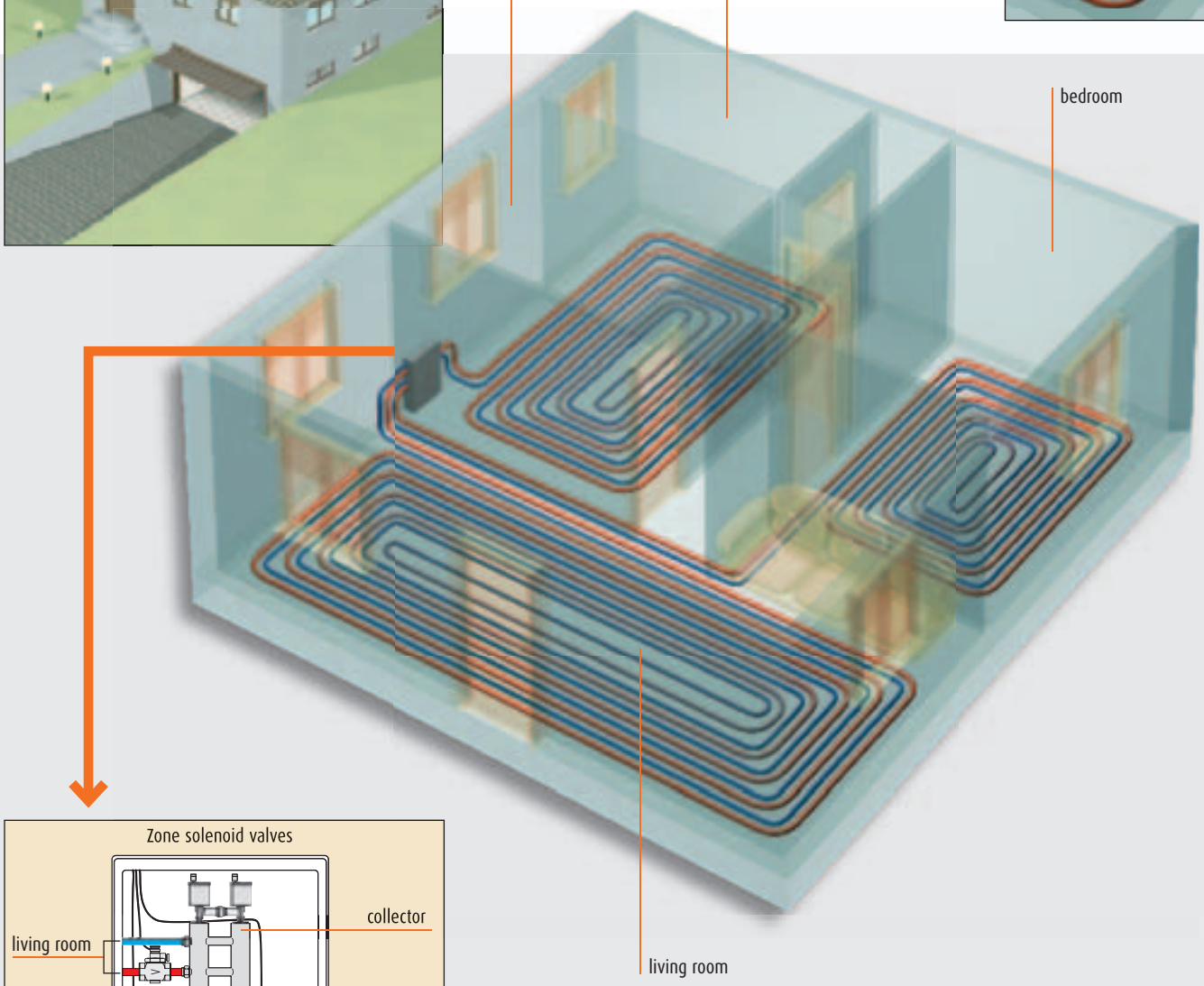


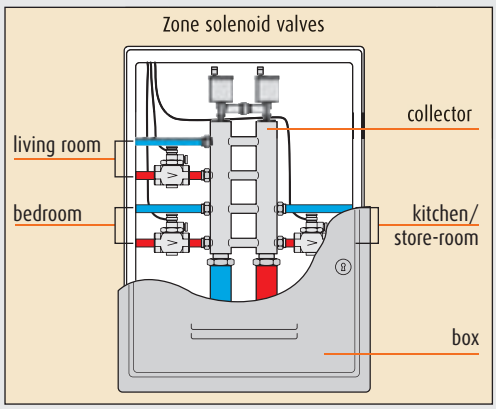
LARGE HOUSE WITH RADIANT PANEL HEATING



■ RADIANT PANELS

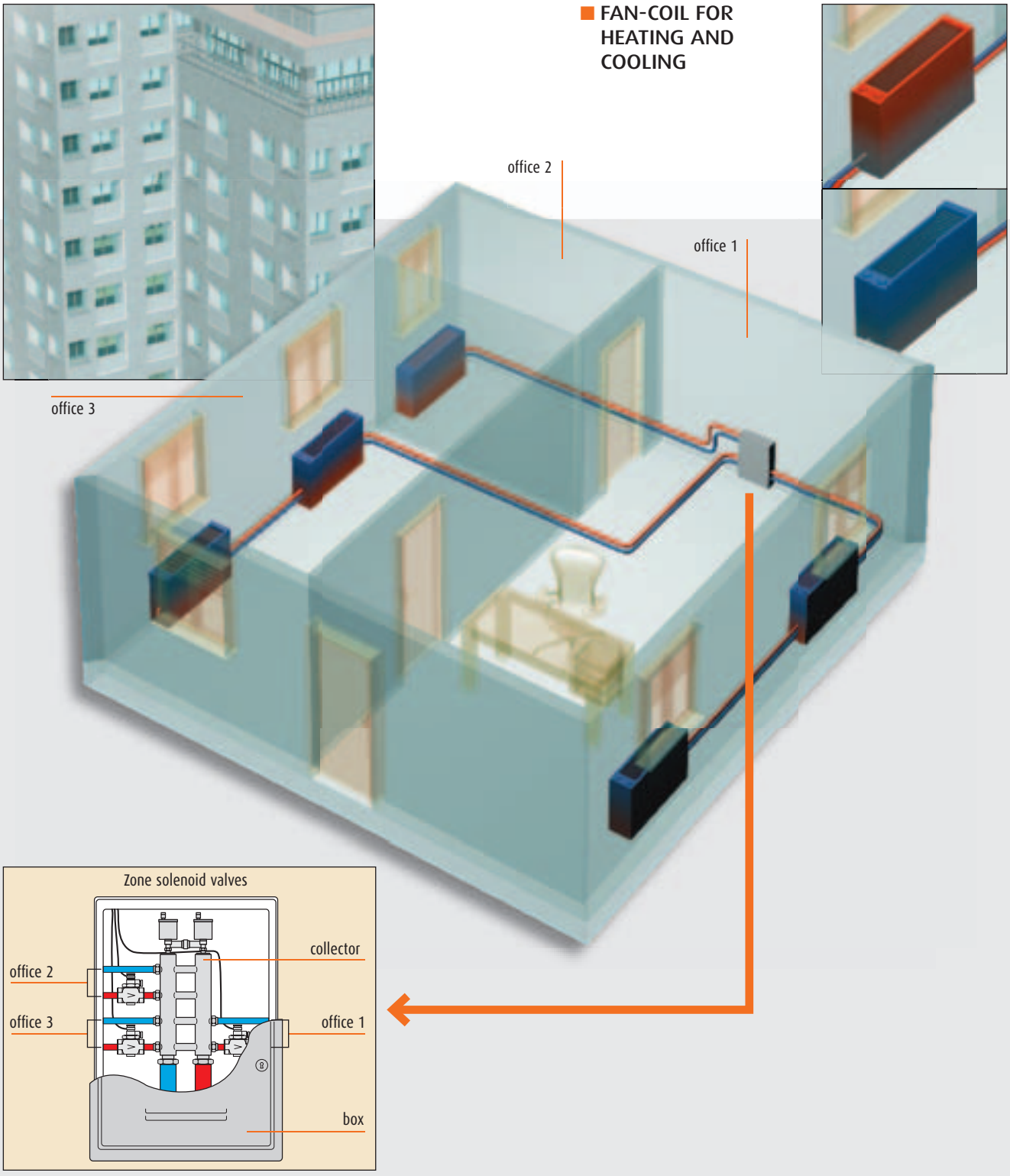






Heating and cooling system examples

OFFICE WITH FAN-COIL HEATING AND COOLING

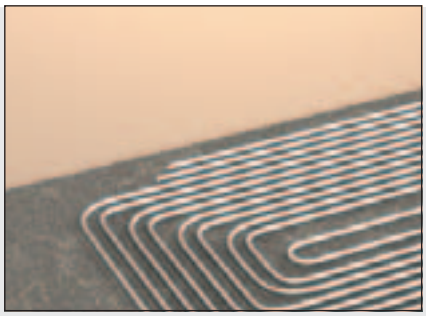


My Home temperature control
The solution for all types of system

HEATING
- radiators
- fan-coil
- radiant panels

TRADITIONAL RADIATORS

FAN-COIL
- 2 and 4 tubes
- 3 speeds



RADIANT PANELS

COOLING
- fan-coil

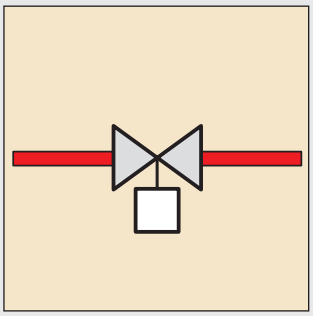
FAN-COIL
- 2 and 4 tubes
- 3 speeds

Hydraulic system design

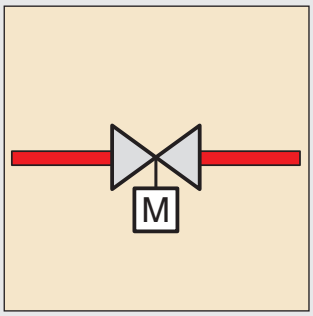
TYPE OF SOLENOID VALVE

In a hydraulic system the zones are built up physically using solenoid valves. Each zone can thus be managed independently by controlling the individual solenoid valves.

2 types of solenoid valves are used in the systems:
- ON/OFF, which requires an ON/OFF contact
- Open/Close, which requires an Open/Close contact



ON/OFF solenoid valve

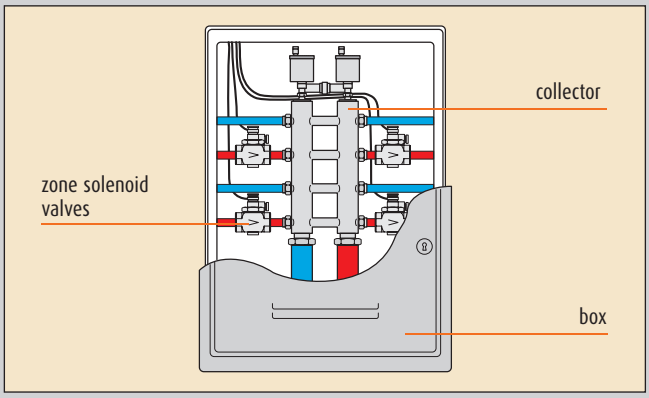


Open/Close solenoid valve

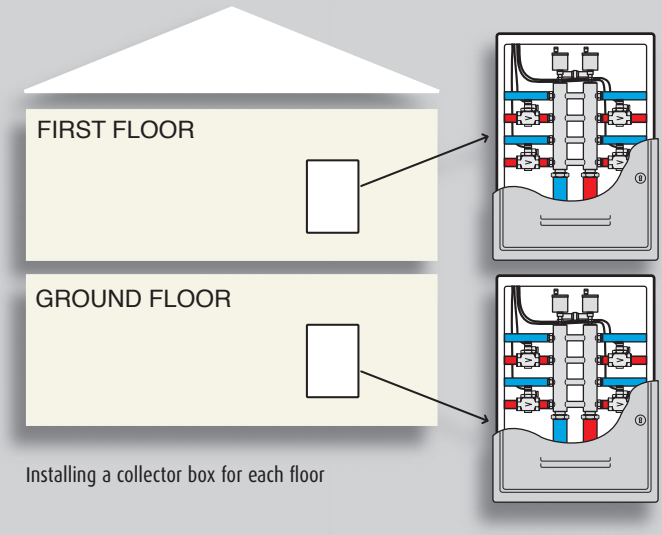
PLACING THE SOLENOID VALVES

In heating systems the typical installations has all the solenoid valves positioned on the collector, grouped in a box in the boiler room. In dwellings on several floors this solution can be replicated for each floor. In fan-coil systems the solenoid valve can be installed inside the fan-coil itself.

In 2-tube systems there is just one solenoid valve for both the heating and cooling functions. In 4-tube systems there are 2 solenoid valves, one each for the heating and cooling functions.

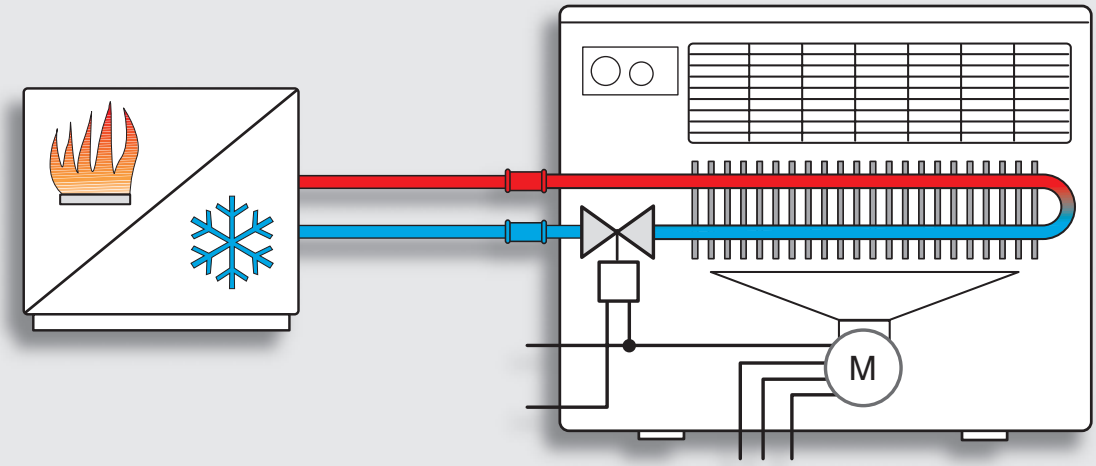


Installing the solenoid valves in the collector box

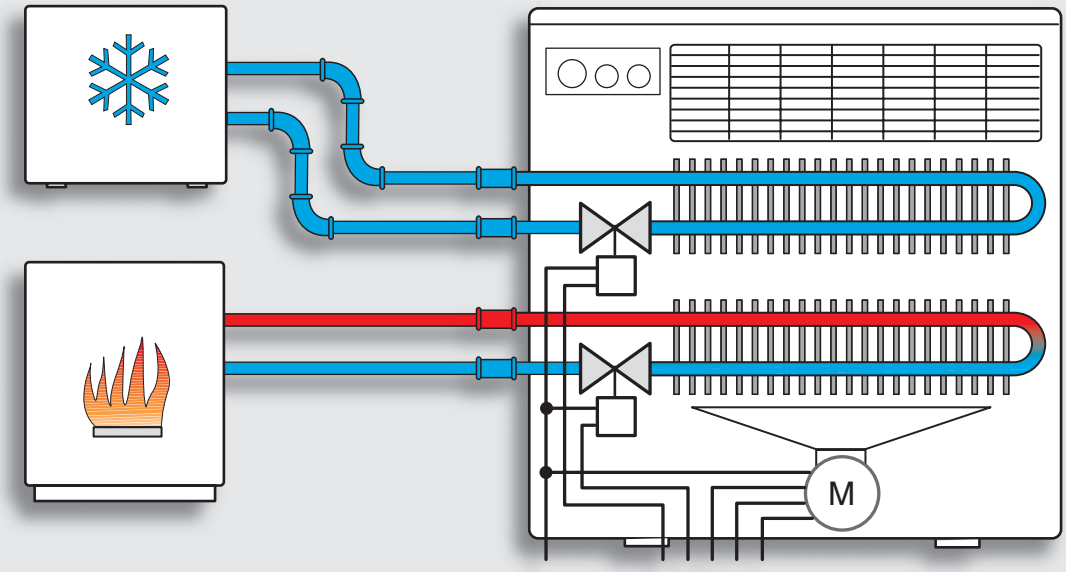


Installing a collector box for each floor

Installing the solenoid valve in a 2-tube fan-coil



Installing the solenoid valve in a 4-tube fan-coil

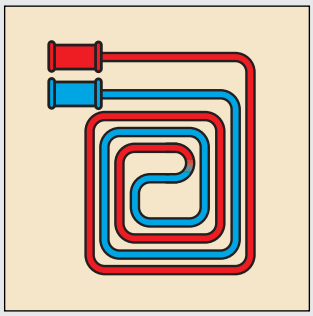


Designing a hydraulic system

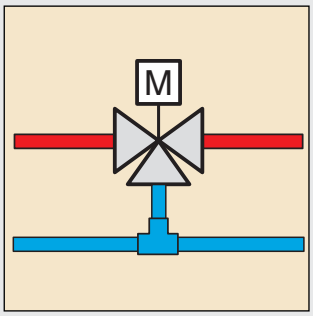
PLACING THE SOLENOID VALVES IN RADIANT PANEL SYSTEMS

Radiant panel systems are always managed in zones and their solution is very similar to that of radiator systems.
The zones are built up by means of solenoid valves grouped on the collector, but there is also a water mixture valve.
This valve is proportional and cannot be controlled by the My Home temperature control.
This valve mixes the water so that a set water temperature limit and thus floor temperature limit is not exceeded, which could be annoying and dangerous.

For this reason this valve must be controlled by a unit supplied by the panel system manufacturer, or it is simply a thermostatic valve on which a fixed water temperature limit is set.

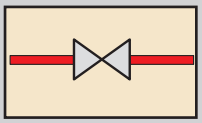


Radiant panels

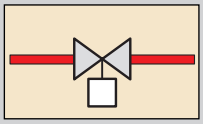


Three-way mixing valve

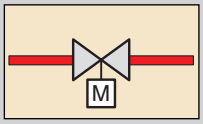
SYMBOL LEGEND



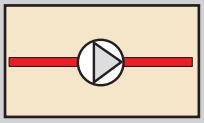
Valve general symbol



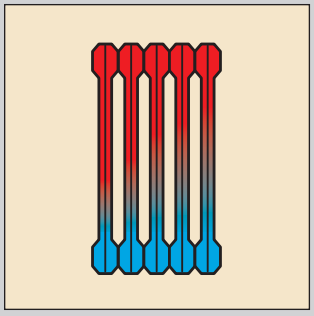
ON/OFF solenoid valve



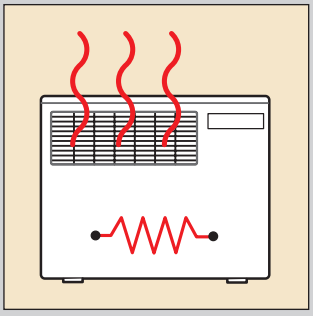
Open/Close solenoid valve



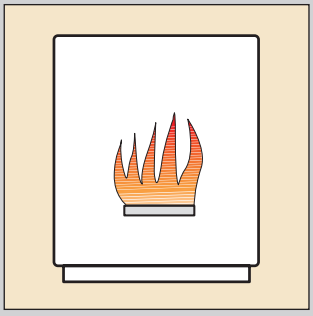
Pump



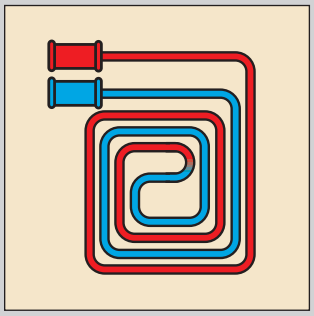
Radiator



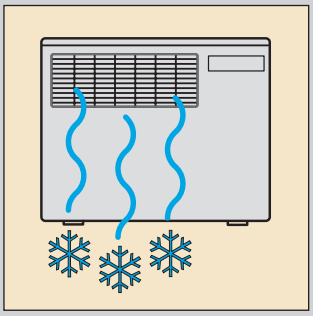
Electric radiator



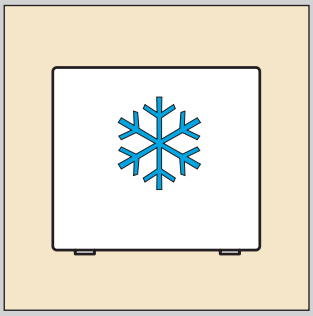
Boiler



Radiant panels



Fan-coil



Chiller

MY HOME temperature control

APPLICATION DEVICES

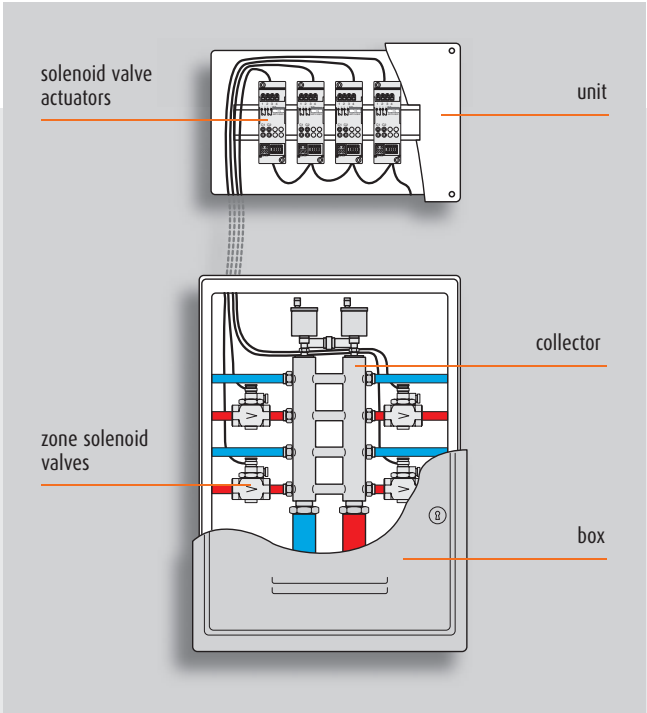
A My Home temperature control system can manage up to 99 zones. The system is on a 2-wire bus and made up of the following devices:

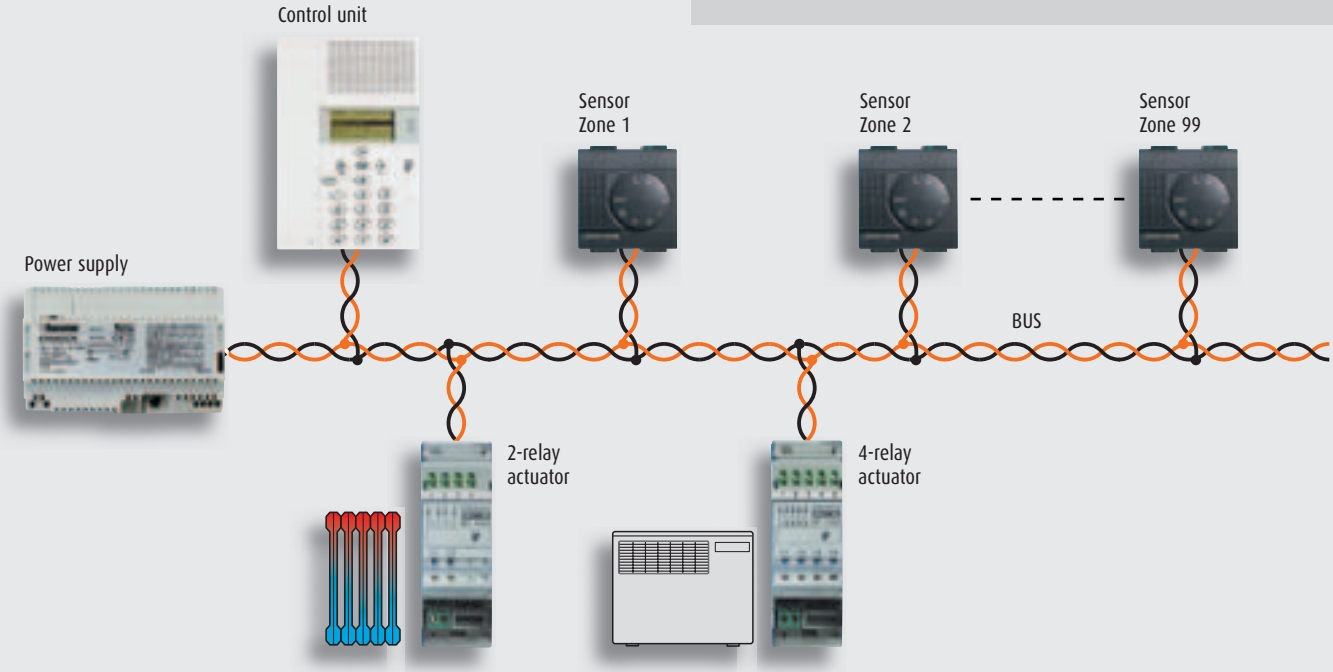
Temperature control unit:
this configures the system, customises the programs and displays information.

Sensors:
at least one sensor must be installed in every zone. They measure the room temperature and can locally vary the temperature set on the control unit.

Actuators:
operate the solenoid valves and the circulation pumps. The number and type of actuators are chosen depending on the type of solenoid valves installed and their location in the system.
Just one contact is used to control the ON/OFF solenoid valves, while the two-relay interlock is used for the open/close solenoid valves. The four-relay actuator controls the fan-coils and also automatically controls the 3 speeds.

The ideal system solution is to have the solenoid valves grouped on the collector, so that a board can be made containing the actuators near the box.
This makes wiring simpler with a small number of actuators.



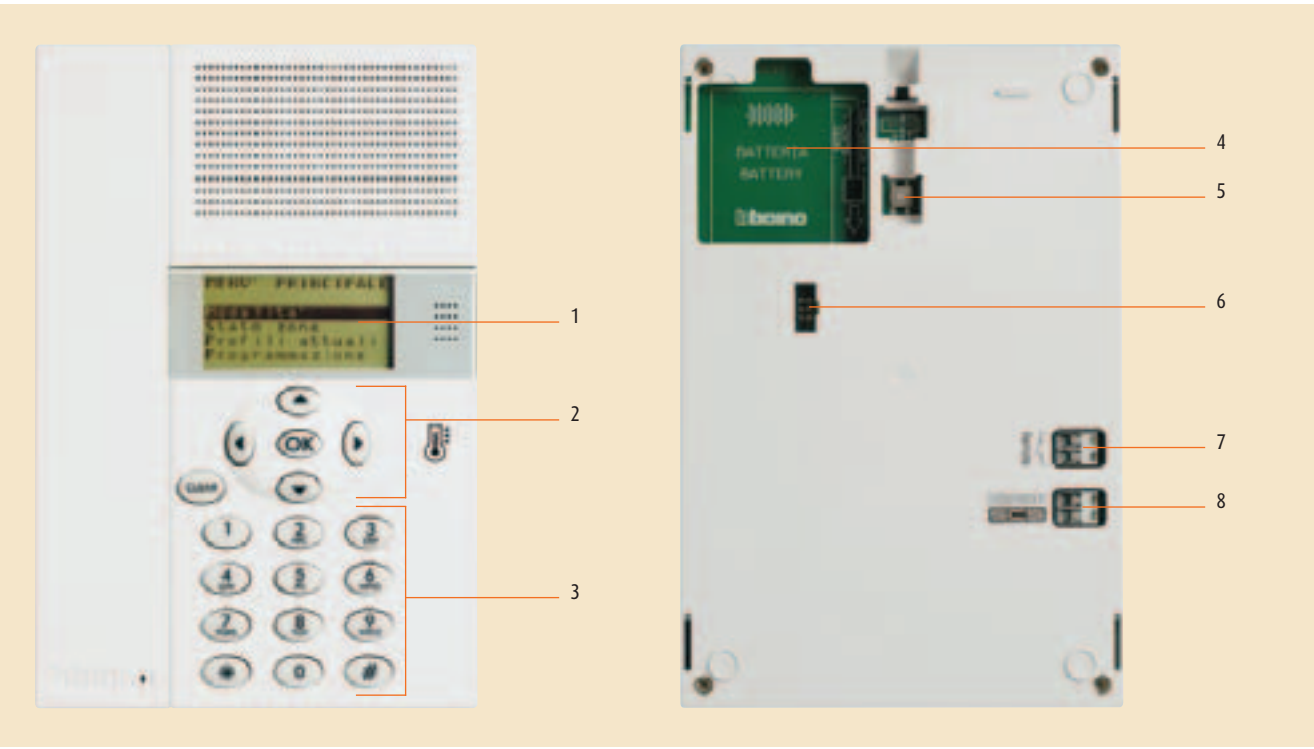


Technical features

TEMPERATURE CONTROL UNIT ITEM 3550

The Control unit, which can only be used for the BTicino temperature control function, can set the system and modify the system mode of operation. Equipped with management software with guided menus shown on the display, it allows the user to chose the mode of operation, display the temperatures of the various zones and display and modify the daily temperature profiles and the weekly programs, while the maintenance menu, reserved for the installer (password protected), allows access to the system settings (zone configuration, system test, total reset, etc.).

The Control unit can provide both heating and cooling and can manage up to 99 different zones (with a Master sensor and/or detector for each zone plus any Slave detectors).
A contact can be connected in input for remote control (switching from the antifrost mode to automatic and vice versa) by means of a telephone actuator.



LEGEND

1) Graphic display: shows the messages which guide the programming operations and the system state.

2) Navigation keypad: allows navigation within the menus and confirms or deletes programming operations.

3) Alphanumeric keypad: allows manual entry of all those programming operations which require the use of numbers and/or symbols.

4) Battery compartment: housing for battery item 3507/6.

5) Reset pushbutton: pushbutton to reset the hardware.

6) Serial connector: connects to a PC via cable item 335919

7) Remote control: connection terminal.

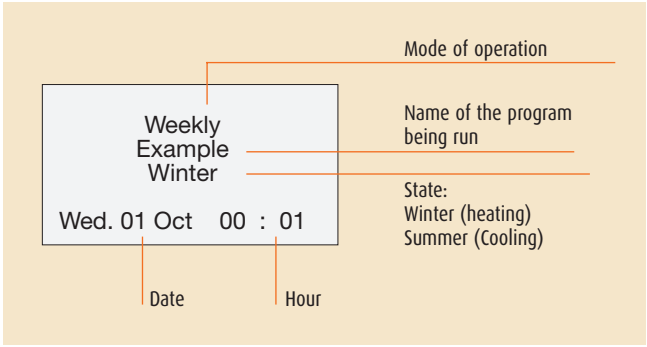
8) BUS: BUS connection terminal.

DATA

Power supply: from 18V to 28V BUS
Maximum absorption: 75 mA
Size: L = 140 H = 210 D = 35
Degree of protection: IP30
Operating temperature: from 5°C to 40°C
Temperature setting: from 5°C to 40°C ± 0.5°C

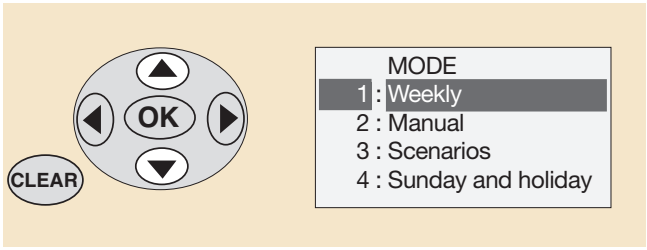
GRAPHIC DISPLAY

In normal working conditions the Control unit display shows the following information on the initial page:

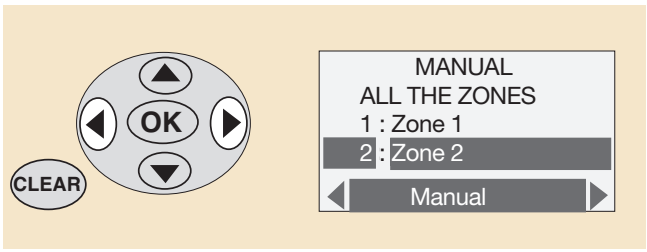


NAVIGATION KEYPAD

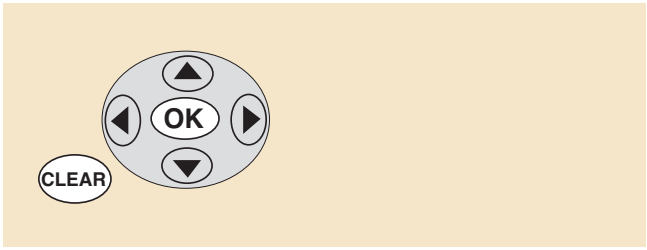
The scroll keys scroll through the list of items in the menu.



The selection keys can select the functions in the menu.



OK – Key to confirm the selection or data entered.
CLEAR – Key to delete the selection and return to the previous screen; if kept pressed quits the Temperature control menu.



Technical features

SENSOR ITEM L/N/NT4692

The device can adjust the room temperature according to the daily routines in both winter and summer, varying the settings locally with respect to those received from the control unit.
The item has a knob for the local temperature selection (limited to ± 3°C with respect to the value set by the control unit), the antifrost mode and the OFF mode. There are two LED, one green and one yellow, on the front of the item. The green LED indicates that the device is working correctly and the activation of the antifrost mode and OFF of the corresponding area. The yellow LED indicates the actuator state and any faults.
The modes are managed according to the criteria listed below.

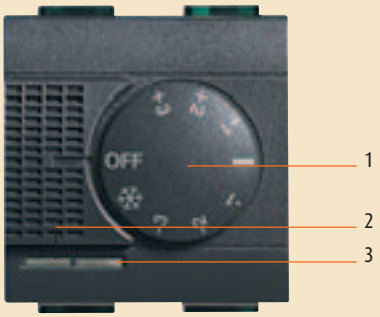
OFF MODE

This mode has the maximum priority, whether selected by the sensor or set by the control unit; to quit the OFF mode use the device which set it.

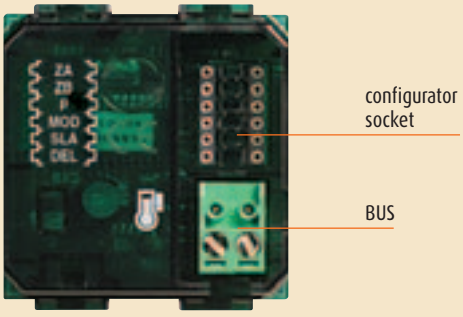
ANTIFROST/THERMAL PROTECTION (❄) MODE

In this position if the Temperature control system is set as heating the sensor works in antifrost mode; if it is set as cooling it works as thermal protection.

The sensor can also work in collaboration with other sensors in "slave" configuration to allow the Control unit to calculate an average of the temperature over several measuring points. This function is useful for managing very large rooms, inside which the temperature can vary appreciably.
If there is a fault on the control unit, the sensor works with the last settings received, thus continuously maintaining the last temperature determined with summer or winter setting.
If the sensor selects the OFF mode this has priority even if the control unit is faulty, thus the zone controlled by the sensor will remain OFF.
The sensor is made in two flush-mounted modules in the LIVING INTERNATIONAL, LIGHT and LIGHT TECH series and can control a zone with a maximum of 9 actuators of the same type, 9 slave sensors and 2 pumps (one for the heating system and one for the cooling).



front view



rear view

LEGEND
1) Knob: for manual temperature setting (± 3°C), to select the antifrost/thermal protection (❄) mode and the OFF state (forced zone off).

2) green LED: when it shines steadily it indicates that the device is active, when it flashes it indicates that the OFF or antifrost modes are set locally.

3) yellow LED: when it shines steadily or it is OFF it signals the state of the devices in the corresponding zone, when it flashes it signals a fault.

DATA
Power supply: from 18V to 28V BUS
Maximum absorption: 6 mA
Operating temperature: from 5°C to 40°C
Installation height: 150 cm
Size: 2 Living International/Light/Light Tech modules

2-RELAY ACTUATOR ITEM F430/2

By means of internal relays, this device executes the commands received from the control unit or the sensor. It is needed to control loads such as motorised valves, pumps and electric radiators.
It has two independent relays which can be used to command two distinct loads with ON/OFF function and to command a single load with open/close function. To manage open/close loads the actuator must be configured with the logic interlock of the two relays and contact C1 must be considered for the opening command and contact C2 for the closing command (see "Configuration" section).

DATA
Power supply: from 18V to 28V BUS
Maximum absorption:
- 25.5 mA with single loads
- 14 mA with interlocked relays

Loads which can be driven:
- 6A resistive (e.g. electric radiators)
- 3A motorised valves and pumps

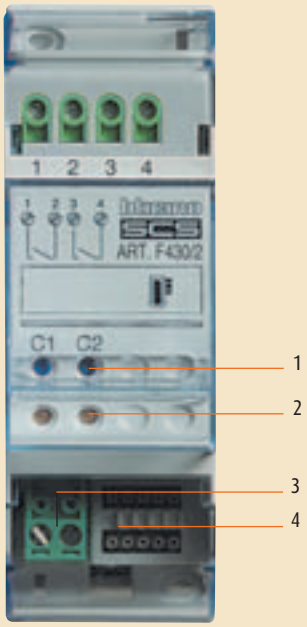
Operating temperature: from 5°C to 40°C
Size: 2 DIN modules

LEGEND
1) Load forcing key: pressing this key activates the loads connected to the actuator. To activate the load its sensor must be kept unconnected.

2) Light indicator: signals that the relay contact is closed.

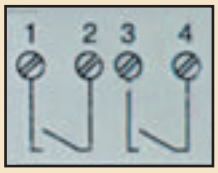
3) BUS: connection for bus cable

4) Configurator socket: housing for the configurators



front view

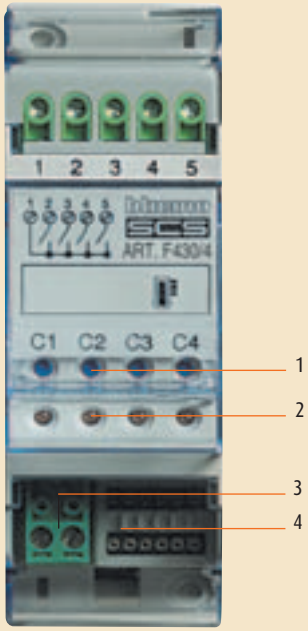
CONTACTS



Technical features

4-RELAY ACTUATOR ITEM F430/4

By means of internal relays, this device executes the commands received from the control unit or the sensor. It is needed to control loads such as 3-speed fan-coils, motorised valves, pumps and electric radiators.
It has four independent relays which can be used to command two distinct loads with ON/OFF function and to command a single load with open/close function. To manage open/close loads the actuator must be configured with the logic interlock of the two relays (see "Configuration" section) and contacts C1/C2 respectively must be considered to open and close the first valve and contacts C3/C4 to open and close the second valve.
The contacts assume different functions when the actuator is used to control fan-coils.
Contact C1 is an ON/OFF contact and commands the valve. Contacts C2, C3 and C4 commands the ventilation minimum, average and maximum speed respectively. The temperature control function automatically selects the ventilation speed depending on the difference between the temperature set by the user and the room temperature.



front view

DATA
Power supply: from 18V to 28V BUS
Maximum absorption:
- 37.5 mA with single loads
- 20.5 mA with interlocked relays or 3-speed fan-coil control

Loads which can be driven:
- 6A resistive (e.g. electric radiators)
- 2A motorised valves and pumps

Operating temperature: from 5°C to 40°C
Size: 2 DIN modules

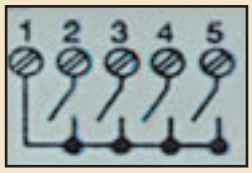
LEGEND
1) Load forcing key: pressing this key activates the loads connected to the actuator. To activate the load its sensor must be kept unconnected.

2) Light indicator: signals that the relay contact is closed.

3) BUS: connection for bus cable.

4) Configurator socket: housing for the configurators.

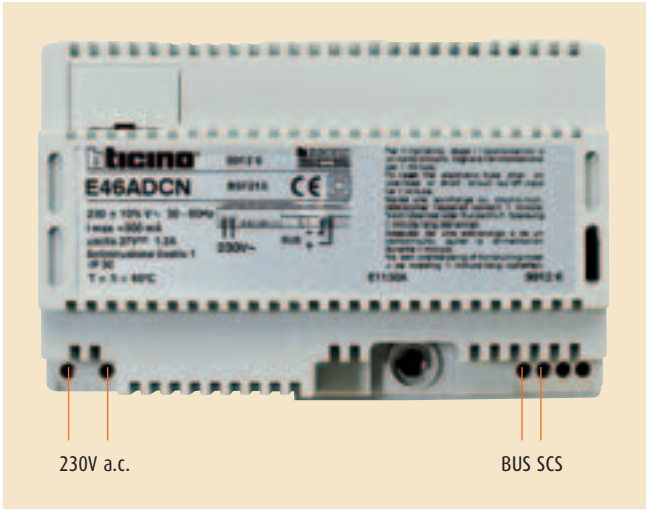
CONTACTS



POWER SUPPLY ITEM E46ADCN

Power supply with output in very low safety voltage (SELV) protected against short-circuit and overload.
It supplies the functional power supply to the system components via the telephone wire.

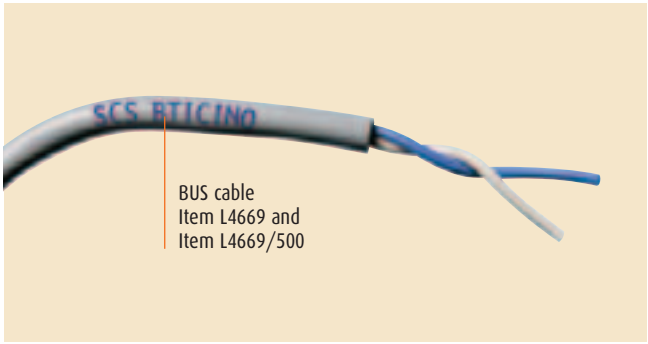
TECHNICAL FEATURES
Power supply: 230V a.c. ± 10% 50/60Hz
Max absorption: 300 mA
Maximum current supplied: 1.2A
Rated output voltage: 27V d.c.
Size: 8 DIN modules



POWER SUPPLY CABLE ITEM L4669 AND ITEM L4669/500

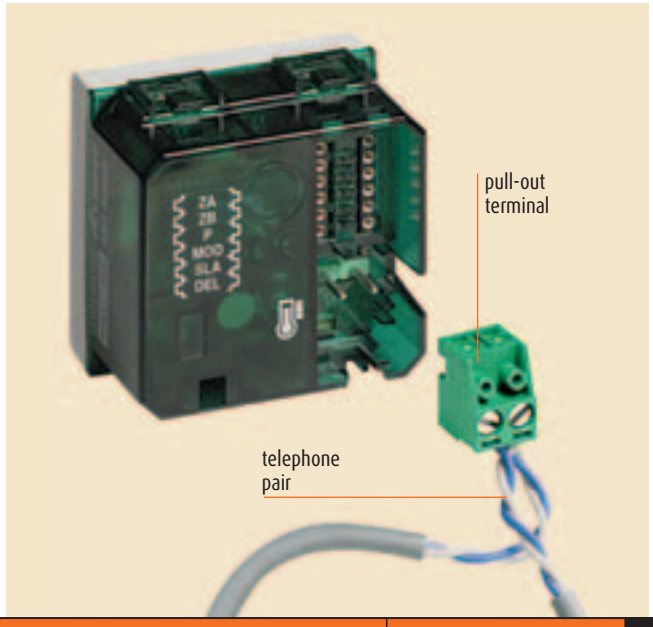
The unshielded telephone pair or the BTicino cable must be used to connect the devices.
The power supplies and operating signals are distributed through this cable.
With the BUS cable insulated to 300/500V and the terminal protection cover with which all the devices are fitted, the BTicino automation system can also be installed in boxes and piping together with the 230V systems.

TECHNICAL FEATURES
No. of conductors: 2 unshielded
Insulation voltage: 300/500V
Coil length: 100m (Item L4669),
500m (Item L4669/500)



PULL-OUT TERMINALS ITEM 3515 (SPARE PART)

All the devices are fitted with pull-out terminals which make wiring and replacing devices much easier.
The cable can in fact be laid inside the piping and terminated with the pull-out terminals.
Later, when the masonry work is finished, the devices are connected without using tools.
The terminals are also available as spare parts in 10 piece packages.



Configuration

DEVICE CONFIGURATION

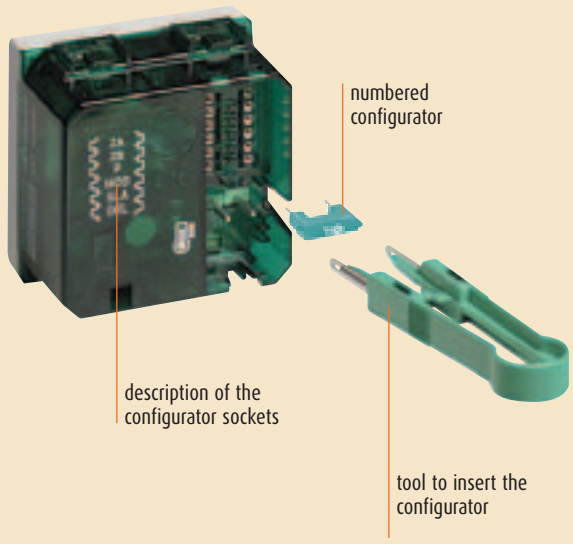
The sensors and actuators must be correctly configured so that they can perform the function required. In practice to configure means defining:

For the sensors:
1 the relevant zone, within the Temperature control function
2 the pump control mode
3 the mode of operation (heating, cooling, etc.)
4 the pump switching on delay (if necessary)

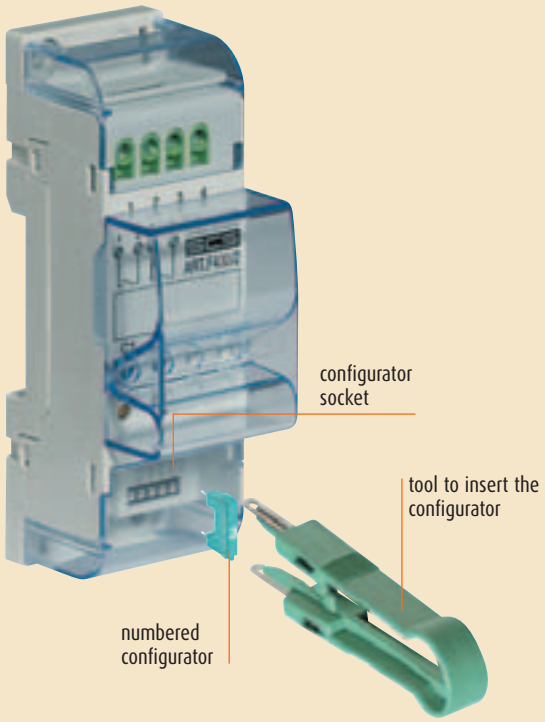
For the actuators:
a) the relevant zone
b) the type of load to manage.

This procedure, called configuration, is performed by inserting push-in components called configurators in the sockets on the devices. The configurators are differentiated by their colour or number and code printed on the body itself.

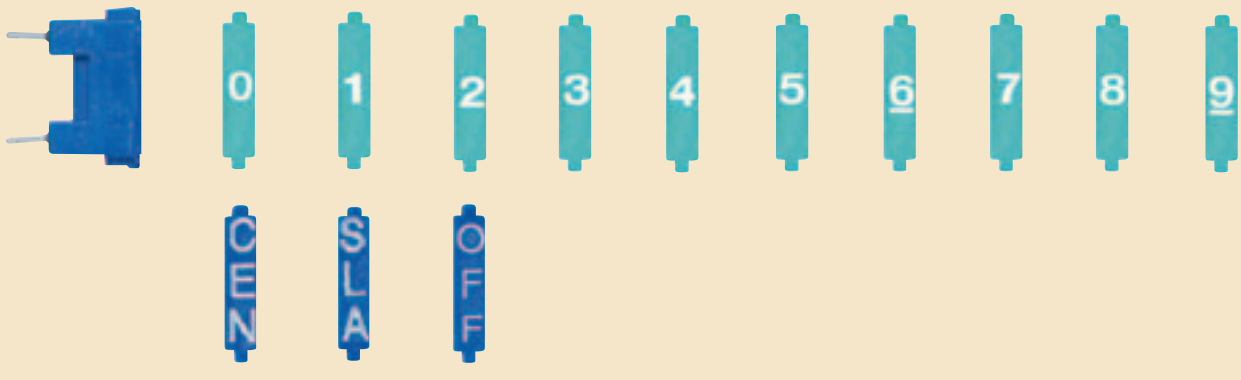
SENSOR CONFIGURATION



ACTUATOR CONFIGURATION



CONFIGURATOR OVERVIEW



DEVICE CONFIGURATION

To understand the addressing logic it is useful to define some frequently occurring terms.

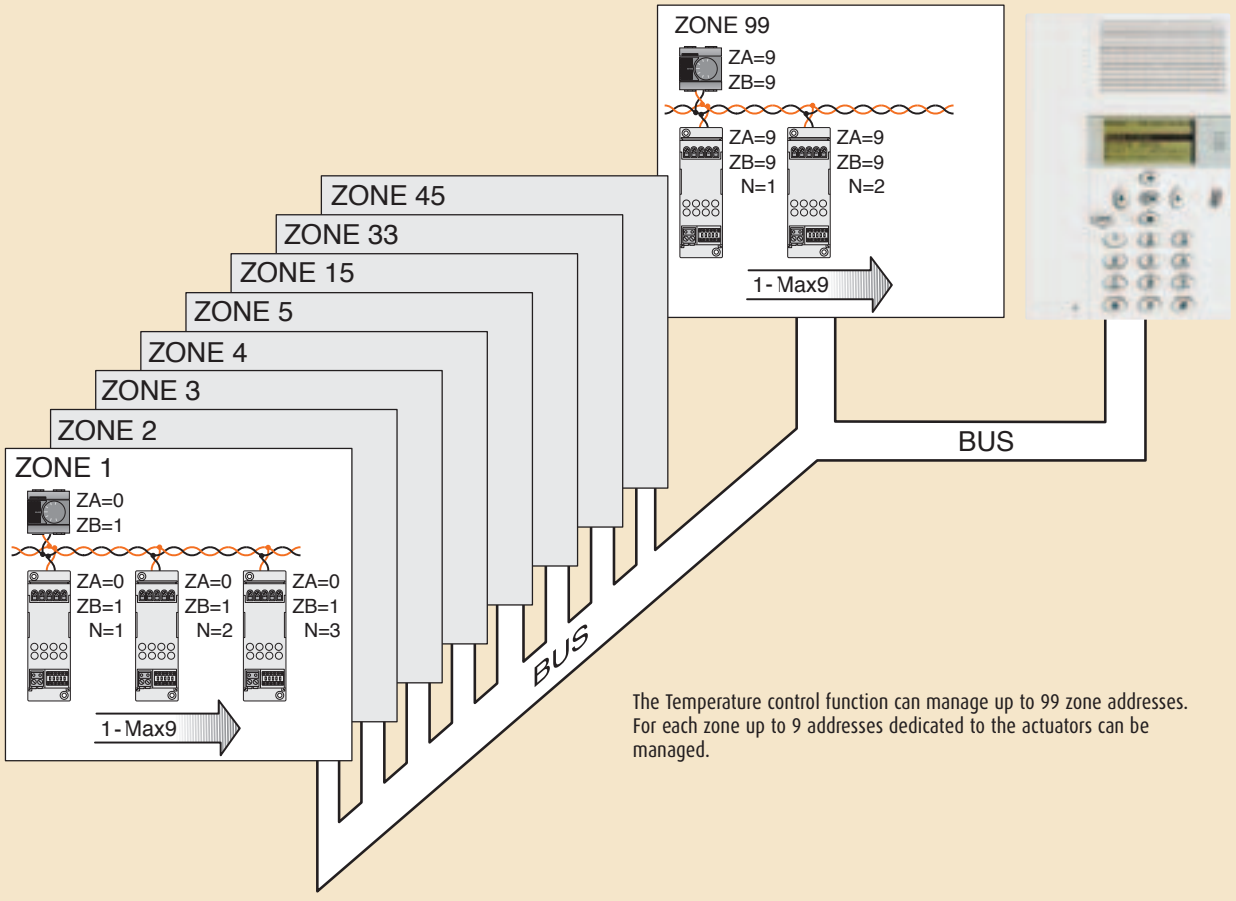
Zone [ZA] and [ZB]
Address of the devices belonging to a logic zone; as an example in a dwelling one can talk about night area, day area and cellar.

Progressive zone number [N]
Numerical identification of the single actuator inside the same zone.

Actuator address
The address of each actuator is uniquely defined by inserting the numerical configurators from **0** to **9** in positions **[ZA]** and **[ZB]**. For each zone a maximum of **9** addresses can be defined by inserting the numerical configurators from **1** to **9** in position **[N]**; a maximum of **99** zones can be defined in a system. Up to **99** zones can be managed in a system; 2 configurators will thus be needed to define the zone number.

Sensor address
The sensors also have positions **[ZA]** and **[ZB]** to define the address of the devices which will receive the command (actuators). These positions have numerical configurators which enable the device to send the command.

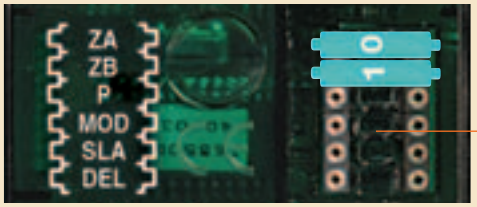
Types of configuration
Depending on the type of system two types of configuration can be activated: **standard configuration** and **quick configuration**. The standard configuration must be actuated when there is more than one actuator for each zone, or actuators with open/close function or 3-speed fan-coil management. The quick configuration can be actuated with simple systems, when each zone has just one actuator for heating and/or just one actuator for cooling. In a simple system the actuator only controls ON/OFF loads (solenoid valves, pumps, one-speed fan-coils and electric radiators); only one circulation pump can be driven for the whole system (one for heating and one for cooling).



The Temperature control function can manage up to 99 zone addresses. For each zone up to 9 addresses dedicated to the actuators can be managed.

Standard configuration
Sensor item L/N/NT4692

Each sensor is always configured by inserting two configurators which identify the sensor address, i.e. the number of the zone controlled by the sensor itself, in sockets **[ZA]** and **[ZB]**. The actuators controlled by this sensor must be configured with the same zone address.



MASTER AND SLAVE SENSOR

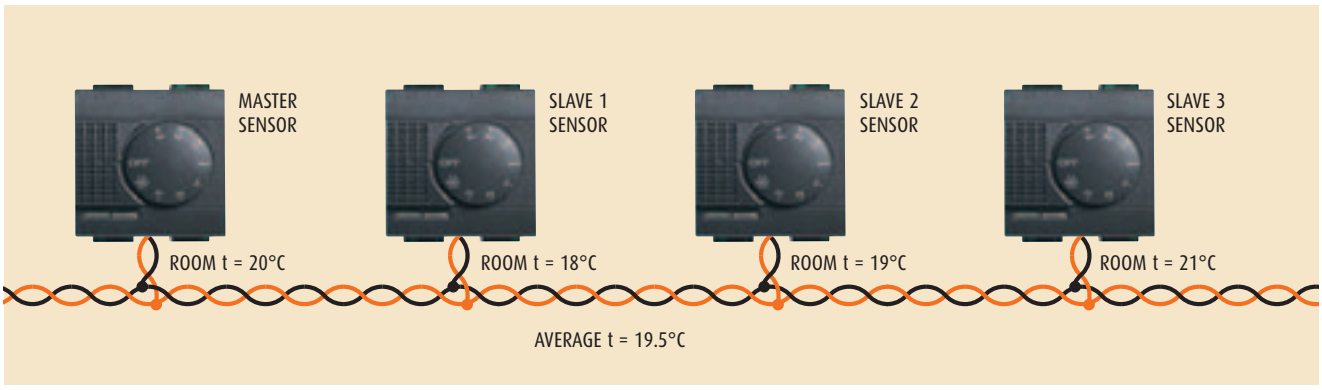
A sensor can work in collaboration with other sensors to allow, inside the same zone, the average calculation of the temperatures at several measurement points. This function is useful for managing very large rooms, inside which the temperature can vary appreciably.
To actuate the function one sensor must be configured as "Master" and one or more sensors as "Slave". The Master sensor calculates the average between its temperature and the temperature measured by the Slave sensor and then carries out the correct actuations.
To tell the Temperature control function that the sensor is Master insert configurator CEN in the **[MOD]** socket and a numerical configurator which indicates the number of Slave sensors in the zone, up to eight, in the **[SLA]** socket. To configure a Slave socket insert the configurator marked SLA in the **[MOD]** socket; in this case sockets **[P]** and **[SEL]** must not be configured. Using the **[SLA]** socket number all the zone Slave sensors progressively. For the numbering start from configurator 1 and respect the sequence without skipping numbers.

MODE

Inserting the configurator marked CEN in the **[MOD]** socket one chooses to program the Temperature control Unit system. In practice one defines whether the zone manages a heating, air conditioning or mixed system by "Configure zones" in the "Maintenance" menu. This also selects the type of load to be controlled by choosing from: ON/OFF, OPEN/CLOSE and FAN-COIL 3V.
To program the Control unit refer to the installation manual which comes with the control unit itself.

EXAMPLE OF CONFIGURATION OF A ZONE (ADDRESS 14) WITH ONE MASTER SENSOR AND THREE SLAVE SENSORS

Insert configurator **3** in the **[SLA]** socket of the Master sensor; insert configurators **1**, **2** and **3** in the **[SLA]** socket of the three Slave sensors. Insert the **SLA** configurator in the **[MOD]** socket of the Slave sensor.



Master Sensor		Slave 1 sensor		Slave 2 sensor		Slave 3 sensor	
Socket	Configurators	Socket	Configurators	Socket	Configurators	Socket	Configurators
[ZA]	1	**[ZA]**	1	**[ZA]**	1	**[ZA]**	1
[ZB]	4	**[ZB]**	4	**[ZB]**	4	**[ZB]**	4
[P]	-	**[P]**	-	**[P]**	-	**[P]**	-
[MOD]	CEN	**[MOD]**	SLA	**[MOD]**	SLA	**[MOD]**	SLA
[SLA]	3	**[SLA]**	1	**[SLA]**	2	**[SLA]**	3
[DEL]	-	**[DEL]**	-	**[DEL]**	-	**[DEL]**	-

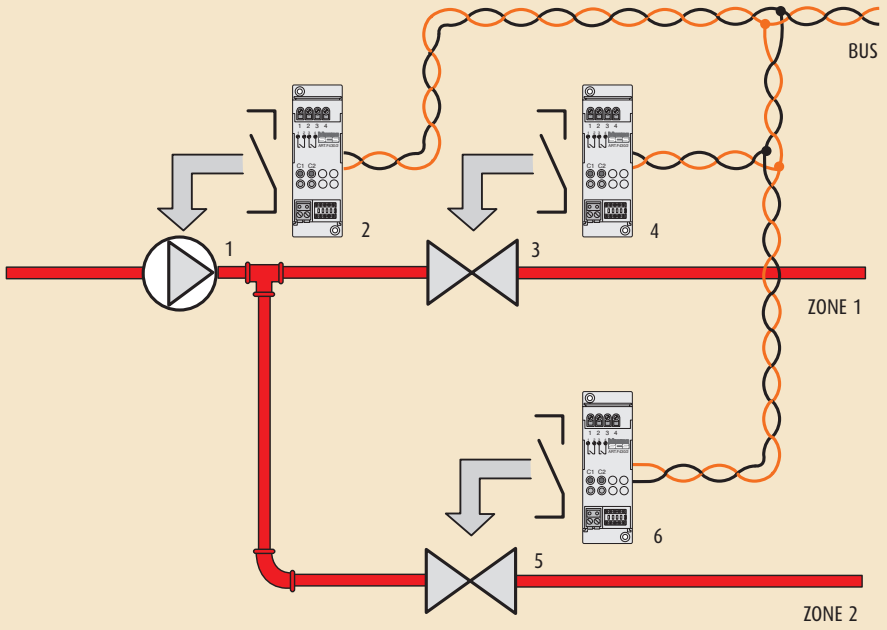
In some types of system one or more water circulation pumps must be commanded, as well as commanding the zone valves.
This control is not necessary in the following cases:

- in systems where the pump is always working (thanks to hydraulic water circulation systems or because there are three-way valves);
- in systems where the pump is managed automatically (i.e. it starts by itself when water is required, it stops by itself when all the valves are closed);
- in systems without pump (e.g. to control air conditioners or electric heating).

The pump management is thus linked to the type of system made and in particular to the number of circulation pumps and solenoid valves used to control the single zone. Principally one can identify two types of solenoid valve: with limit switch and without limit switch.

SINGLE CIRCULATION PUMP

In this case the pump is managed by a dedicated actuator and thus the actuator contact, configured in zone 00, must be connected to the circulation pump (also see actuator configuration).



LEGEND
1 - circulation pump
2 – pump actuator
3 – solenoid valve zone 1
4 – actuator zone 1
5 – solenoid valve zone 2
6 – actuator zone 2

Standard configuration
Sensor item L/N/NT4692

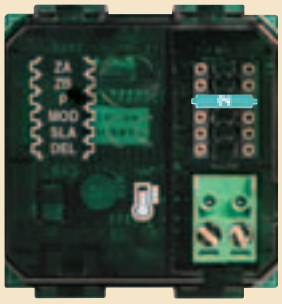
USE OF SOCKET [P]

- If the circulation pump must be controlled for both the heating function and the cooling function and the two functions will use the same pump, insert configurator **1** in **[P]**. Then connect the pump to an actuator configured in zone **00** (**[ZA]** = 0, **[ZB]** = 0) and put configurator **1** in socket **[N]** (see actuator configuration).
- If a pump must be controlled for the heating function only, insert configurator **2** in socket **[P]** and connect the pump to an actuator configured in zone **00** with **[N]** = **1** (see actuator configuration).
- If a pump must be controlled for the cooling function only, insert configurator **3** in socket **[P]** and connect the pump to an actuator configured in zone **00** with **[N]** = **2** (see actuator configuration).
- If two separate pumps must be controlled, one for the heating function and one for the cooling function, insert configurator **4** in **[P]**. Then connect the heating pump to an actuator configured in zone **00** with **[N]** = **1** and the cooling pump to an actuator configured in zone **00** with **[N]** = **2** (see actuator configuration).

PUMP SWITCHING ON DELAY

When the system has a circulation pump managed by the Temperature control function, it may be necessary to insert a configurator in the **[DEL]** socket of the temperature sensor as well. This operation is only performed if the pump is to switch on with a certain delay after the zone valves open. This choice depends on the type of valve installed and allows switching on the pump only when the valve is completely open.
Insert the configurator corresponding to the delay required in the **[DEL]** socket.
In this case the number shown on the configurator indicates the time in minutes.
If configurator **3** is inserted in **[DEL]**, after closing the relay which commands valve opening, the sensor waits for 3 minutes before switching on the pump. A delay of a maximum of nine minutes can be configured, depending on the time the valves need to open. Refer to the technical specifications declared by the solenoid valve manufacturer to find out the opening time.

Configuration of socket **[P]** for a system with **one circulation pump** for the two **heating and cooling** functions.



Configuration of socket **[P]** for a system with **one circulation pump** for just the **heating** function.

Configuration of socket **[P]** for a system with **one circulation pump** for just the **cooling** function.

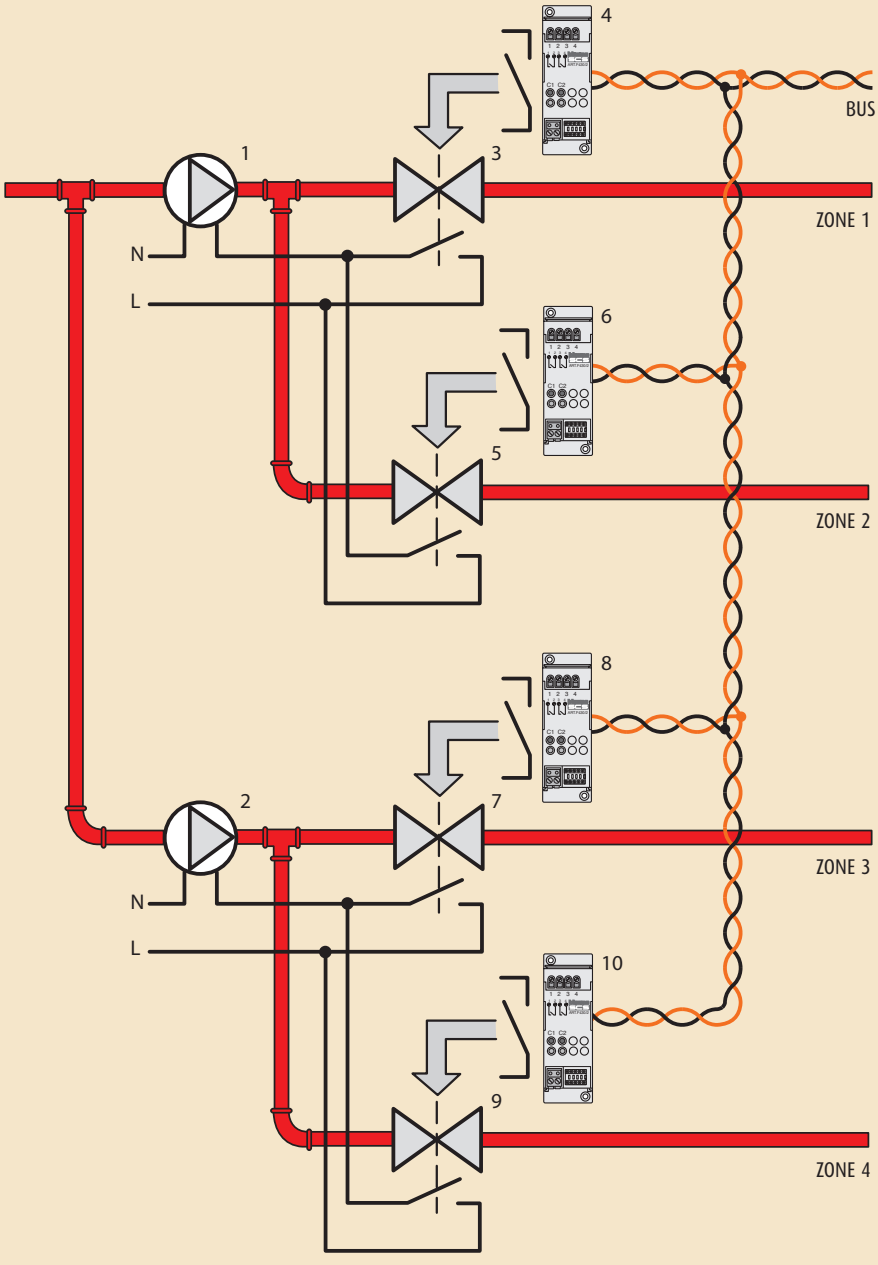
Configuration of socket **[P]** for a system with **two separate pumps** one for **heating** and one for **cooling**.

SEVERAL CIRCULATION PUMPS

There may be several circulation pumps, which serve different groups of zones, in the same system.

SOLENOID VALVE WITH LIMIT SWITCH

The valve is managed by its actuator. Traditional wiring must be installed to manage the pumps, connecting the limit switch contacts of the zone valves to the pump in parallel. No sensor configuration is required.

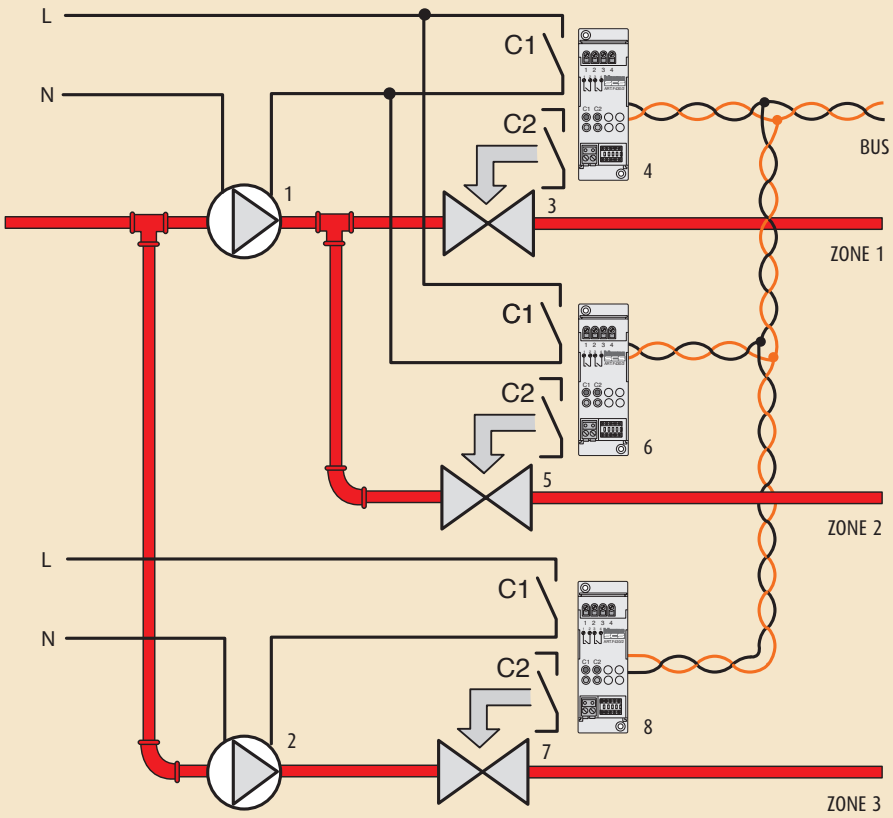


LEGEND
1 - circulation pump zone 1 and 2
2 – circulation pump zone 3 and 4
3 – solenoid valve zone 1
4 – actuator zone 1
5 – solenoid valve zone 2
6 – actuator zone 2
7 – solenoid valve zone 3
8 – actuator zone 3
9 – solenoid valve zone 4
10 – actuator zone 4

Standard configuration
Sensor item L/N/NT4692

SOLENOID VALVE WITHOUT LIMIT SWITCH

When the solenoid valves do not have limit switches a two-relay actuator must be used for each zone (item F430/2), using one relay to manage the valve and the other relay to manage the pump belonging to the unit.
For each actuator belonging to the same group of zones the pump contacts must be connected in parallel. No sensor configuration is required.



LEGEND
1 - circulation pump zone 1 and 2
2 - circulation pump zone 3 and 4
3 - solenoid valve zone 1
4 - actuator zone 1
5 - solenoid valve zone 2
6 - actuator zone 2
7 - solenoid valve zone 3
8 - actuator zone 3

Standard configuration 2-relay actuator F430/2

The item is configured by inserting two configurators which identify the actuator address, i.e. the number of the relevant zone, in sockets **[ZA]** and **[ZB]**; practically the operation is the same as that performed for the sensor in the zone definition phase.
A sensor and an actuator which belong to the same zone will have the same numerical configurators in sockets **[ZA]** and **[ZB]**.
On the front part of the two-relay actuator there are five sockets for configurators: **[ZA]**, **[ZB1]**, **[N1]**, **[ZB2]** and **[N2]**. The configuration sockets are divided over the two relays as follows:

[ZA] [ZB1]	Relay 1 zone address
[N1]	Relay 1 zone progressive number
[ZA] [ZB2]	Relay 2 zone address
[N2]	Relay 2 zone progressive number

The two relays mounted on the device are independent and can be used to drive two separate loads with ON/OFF function such as: pumps, on/off driven valves and electric radiators. The diagram indicates the correspondence between the configurator sockets and the relay contacts.

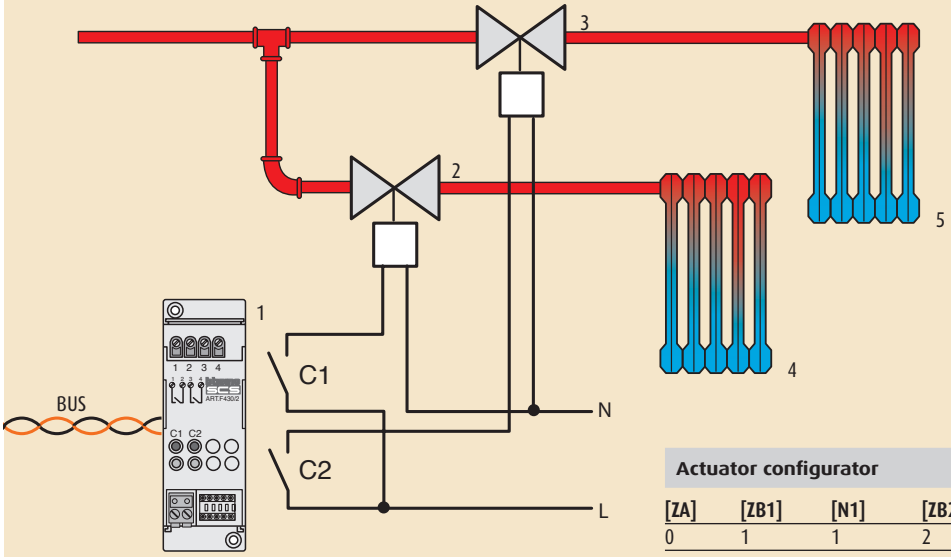
configurator socket RL1	**[ZA]** **[ZB1]** **[N1]**	1 2	contact C1 RL1
configurator socket RL2	**[ZA]** **[ZB2]** **[N2]**	3 4	contact C2 RL2

Operation of one of the two relays can be excluded. To do this insert the **OFF** configurator in the socket corresponding to **[ZB1]** or **[ZB2]**. The two relays can also be used to control a single load with OPEN/CLOSE function, e.g. solenoid valves with opening and closing command. To manage these loads configure the actuator with the relay logic interlock, inserting the same numerical configurator in both **[ZB]** and **[N]**, i.e. **[ZB1]** = **[ZB2]** and **[N1]** = **[N2]**. To use the contacts consider contact C1 for the opening command and contact C2 for the closing command. A relay configured in zone **00** acts as circulation pump actuator; for this function the two relays cannot be configured as interlocked.

Standard configuration
2-relay actuator F430/2

EXAMPLE

Configuration and connection of the 2-relay actuator to control two solenoid valves (ON/OFF type) in two different zones (zone 1 and zone 2). The progressive number in the zone is 1.



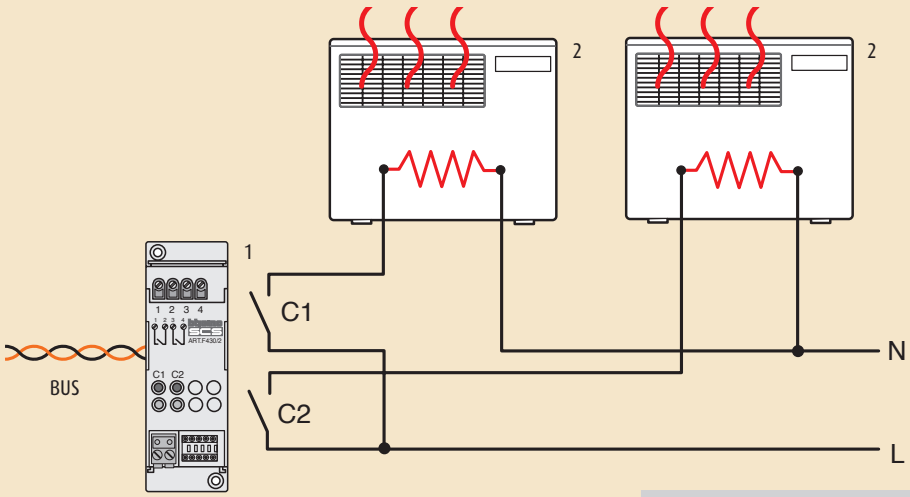
LEGEND
1 actuator
2 solenoid valve zone 1
3 solenoid valve zone 2
4 radiator zone 1
5 radiator zone 2

Actuator configurator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]	RL1/C1	RL2/C2
0	1	1	2	1	ON/OFF	ON/OFF

EXAMPLE

Configuration and connection of the 2-relay actuator to control two electric heaters in the same zone (zone 4). The progressive numbers in the zone are 1 and 2.



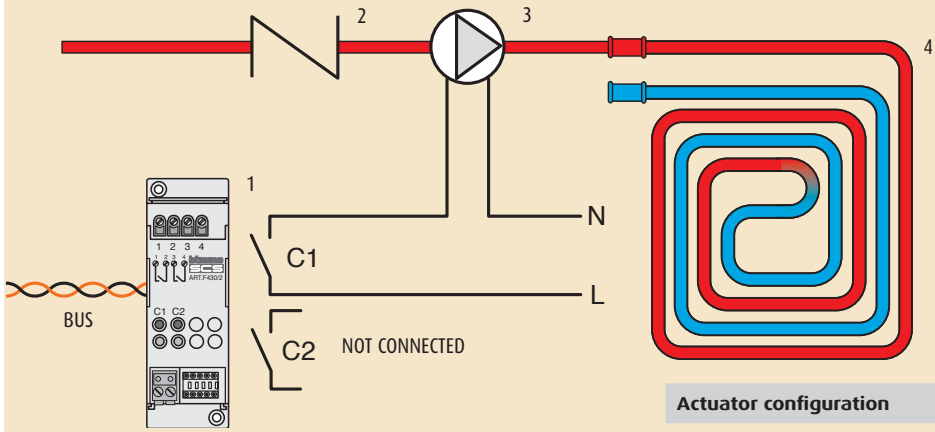
LEGEND
1 actuator
2 electric heaters zone 4

Actuator configurator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]	RL1/C1	RL2/C2
0	4	1	4	2	ON/OFF	ON/OFF

EXAMPLE

Configuration and connection of the 2-relay actuator to control a zone pump (in zone 7). The progressive number in the zone is 1. As relay RL2 is not used it is excluded.



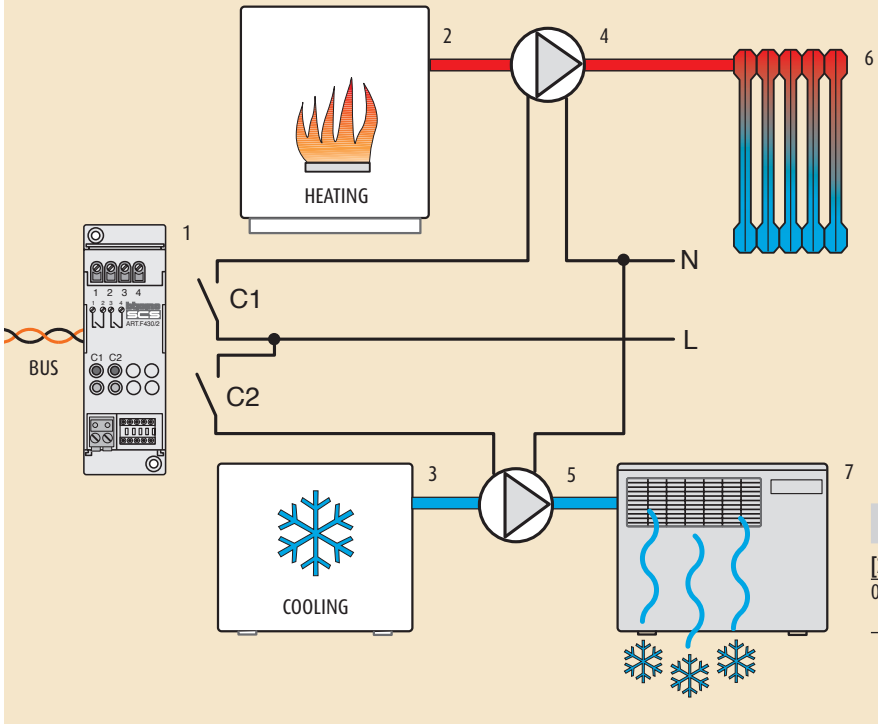
LEGEND
1 actuator
2 check valve
3 pump zone 7
4 radiant panel

Actuator configuration

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]	RL1/C1	RL2/C2
0	7	1	OFF	–	ON/OFF	Excluded

EXAMPLE

Example: configuration and connection of the 2-relay actuator to control two circulation pumps (zone 00). The progressive numbers in the zone are 1 and 2.



LEGEND
1 actuator
2 boiler
3 chiller
4 heating circulation pump
5 cooling circulation pump
6 radiator
7 fan-coil

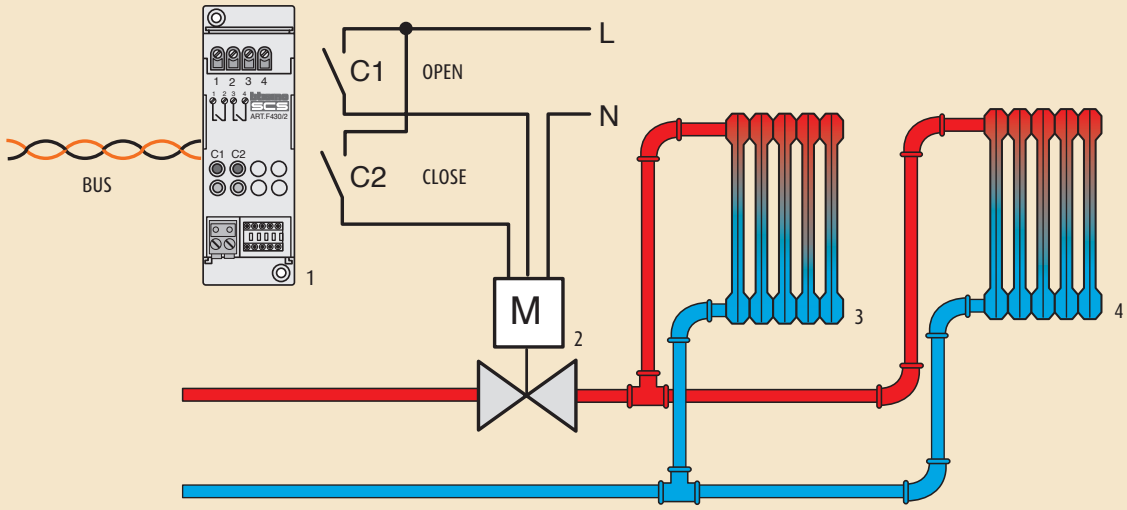
Actuator configuration

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]	RL1/C1	RL2/C2
0	0	1	0	2	Pump 1	Pump 2

Standard configuration
2-relay actuator F430/2

EXAMPLE

Configuration and connection of the 2-relay actuator with interlock to control a solenoid valve with opening and closing command in zone 16.



Actuator configuration

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]	RL1/C1	RL2/C2
1	6	2	6	2	OPEN	CLOSE

LEGEND
1 actuator
2 solenoid valve with opening and closing command
3 radiator zone 16
4 radiator zone 16

Standard configuration 4-relay actuator F430/4

As for the two-relay actuator two configurators which identify the actuator address, i.e. the number of the relevant zone, must be inserted in sockets **[ZA]** and **[ZB]**. A sensor and an actuator which belong to the same zone will have the same numerical configurators in sockets **[ZA]** and **[ZB]**.
On the front part of the four-relay actuator there are six sockets for configurators: **[ZA]**, **[ZB1]**, **[ZB2]**, **[ZB3]**, **[ZB3]** and **[N]**. The configuration sockets are divided over the four relays as follows:

[ZA] [ZB1] Relay 1 zone address

[ZA] [ZB2] Relay 2 zone address

[ZA] [ZB3] Relay 3 zone address

[ZA] [ZB4] Relay 4 zone address

[N] zone progressive number

The relays mounted on the device are independent and can be used to drive four separate loads with ON/OFF function. Thus if all the **[ZN]** configurators are different, the four relays are configured to command the four loads in four different zones.
The diagram indicates the correspondence between the configurator sockets and the relay contacts.

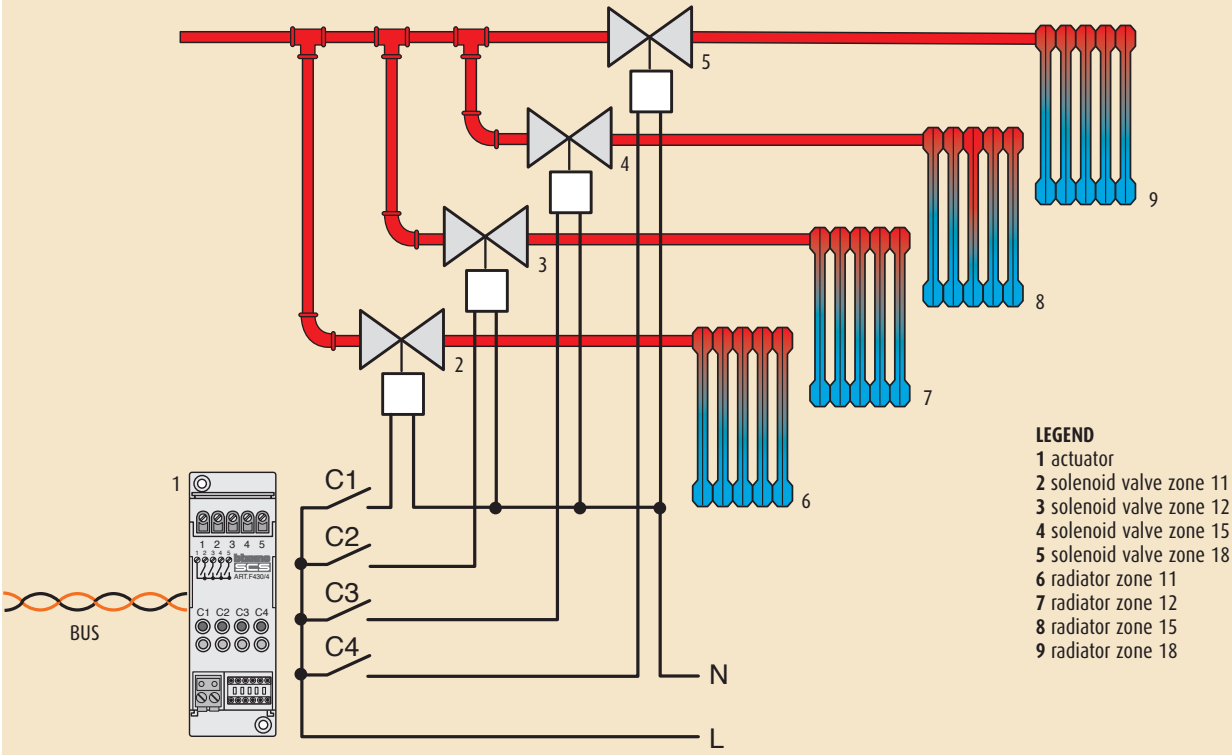
Operation of one or more relays can be excluded. To do this insert the **OFF** configurator in the **[ZB]** socket corresponding to the relay not used. RL1 cannot be excluded however.
The actuator can also be used to control two single loads with Open/Close function, e.g. solenoid valves with opening and closing command. To manage these loads configure the actuator with the relay logic interlock, inserting two identical consecutive configurators i.e. **[ZB1]** = **[ZB2]** and **[ZB3]** = **[ZB4]** in **[ZB]**.To use the contacts consider C1 and C2 respectively to open and close the first valve and contacts C3 and C4 to open and close the second valve.
The relay contacts perform different functions when the actuator is used to control fan-coils. To actuate this function insert four identical configurators i.e. **[ZB1]** = **[ZB2]** = **[ZB3]** = **[ZB4]** in position **[ZB]**. Contact C1 is an ON/OFF contact and commands the valve, contacts C2, C3 and C4 control the minimum, average and maximum ventilation speeds respectively. The temperature control function automatically selects the ventilation speed depending on the different between the temperature set by the user and the room temperature. This actuator cannot be used to command the system circulation pump (configuration in zone **00**) and to command several separate loads belonging to the same zone.

		1	common
configurator socket RL1	**[ZA]** **[ZB1]**	2	contact C1 RL1
configurator socket RL2	**[ZA]** **[ZB2]**	3	contact C2 RL2
configurator socket RL3	**[ZA]** **[ZB3]**	4	contact C3 RL3
configurator socket RL4	**[ZA]** **[ZB4]**	5	contact C4 RL4

Standard configuration
4-relay actuator F430/4

EXAMPLE

Configuration and connection of the 4-relay actuator to control four solenoid valves (ON/OFF type) in four different zones (zone 11, zone 12, zone 15 and zone 18). The zone progressive number is 1.



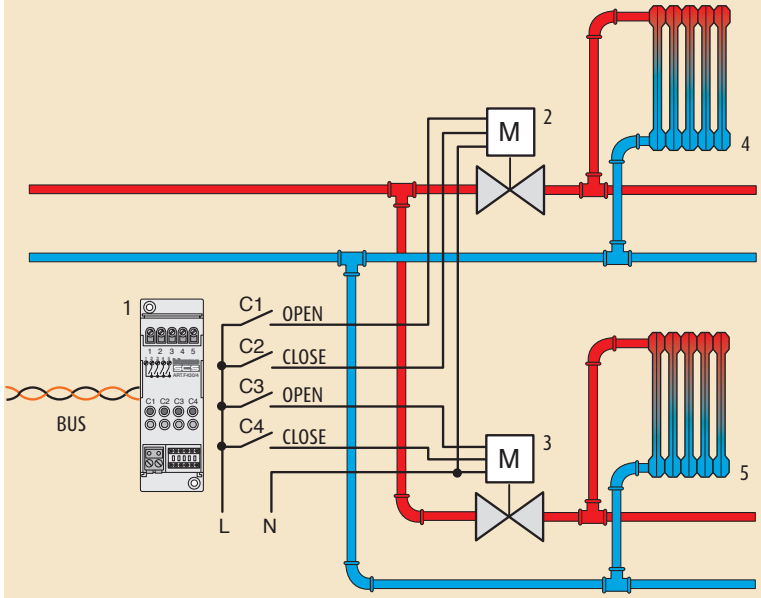
LEGEND
1 actuator
2 solenoid valve zone 11
3 solenoid valve zone 12
4 solenoid valve zone 15
5 solenoid valve zone 18
6 radiator zone 11
7 radiator zone 12
8 radiator zone 15
9 radiator zone 18

Actuator configuration

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]	RL1/C1	RL2/C2	RL3/C3	RL4/C4
1	1	2	5	8	1	ON/OFF	ON/OFF	ON/OFF	ON/OFF

EXAMPLE

Configuration and connection of the 4-relay actuator with interlock to control two solenoid valves with opening and closing command in zones 2 and 3. The progressive number in the zone is 2.



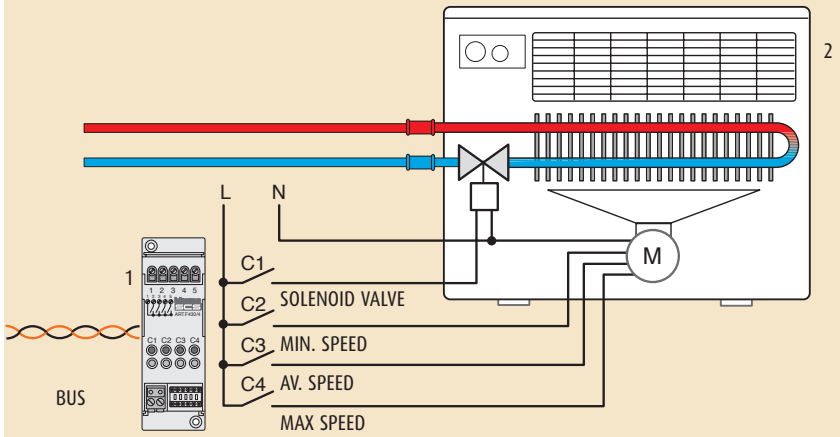
LEGEND
1 actuator
2 solenoid valve zone 2
3 solenoid valve zone 3
4 radiator zone 2
5 radiator zone 3

Actuator configuration

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]	RL1/C1	RL2/C2	RL3/C3	RL4/C4
0	2	2	3	3	2	OPEN	CLOSE	OPEN	CLOSE

EXAMPLE

Configuration and connection of the 4-relay actuator to control a three-speed fan-coil in zone 69. The progressive number in the zone is 4.



LEGEND
1 actuator
2 fan-coil 2 tubes 3 speeds

NOTE
If a fan-coil is used in heating systems the fan must not turn when the water is cold, to avoid cooling the room instead of heating it. Some fan-coils have a water temperature sensor to perform this function. If a fan-coil without sensor is used an efficient solution is that of using an immersion thermostat to be installed on the water return pipe. The thermostat contact commands a remote switch to which the fan-coil power supplies are connected.

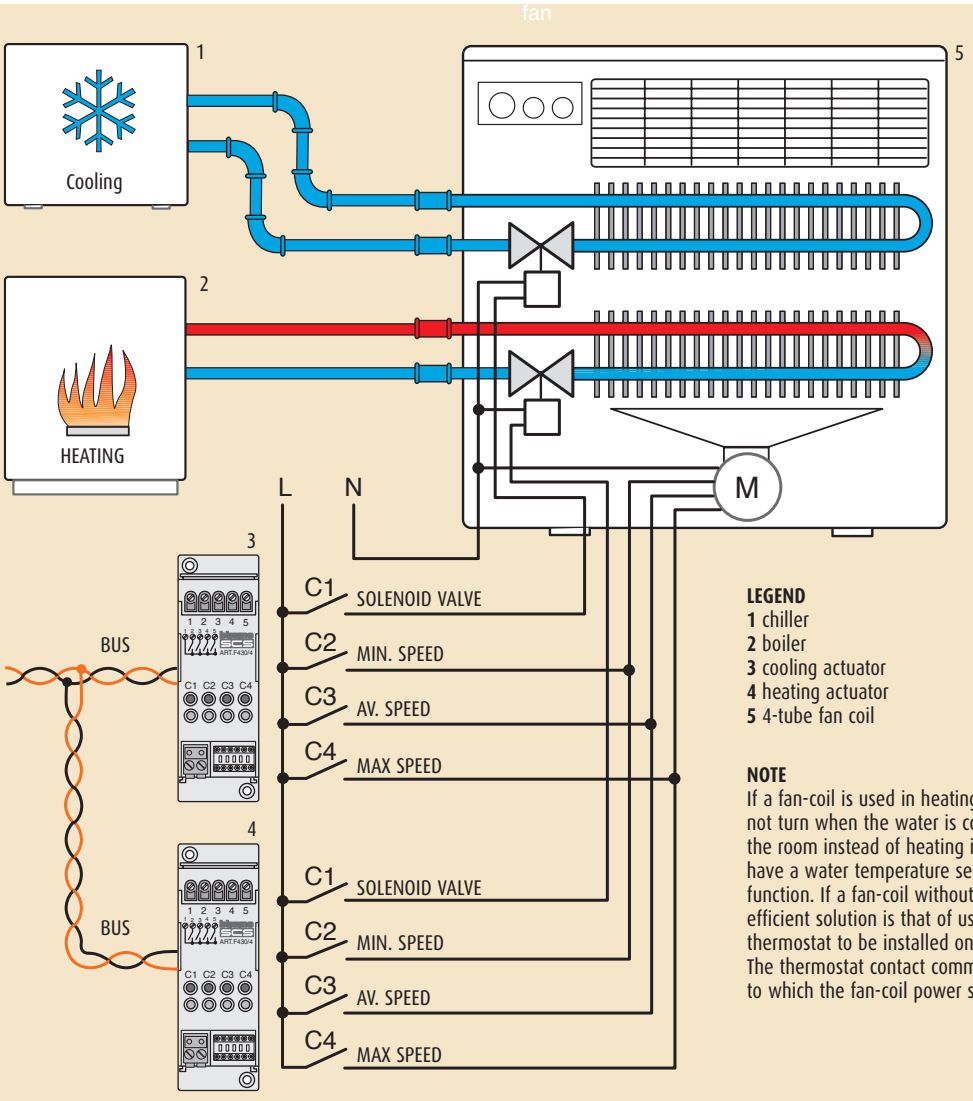
Actuator configuration

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]	RL1/C1	RL2/C2	RL3/C3	RL4/C4
6	9	9	9	9	4	Valve	Minimum speed fan	Average speed fan	Maximum speed fan

Standard configuration
4-relay actuator item F430/4

EXAMPLE

Configuration and connection of two 4-relay actuators (one for cooling and one for heating) to control a three-speed 4-tube fan-coil. For both actuators the zone is 28. The progressive number for the actuator intended for the cooling is 5, while for the actuator intended for the heating it is 6.
Contact C1 of each actuator commands the solenoid valve which is selected by the temperature control function depending on the system setting (summer or winter). Contacts C2, C3 and C4 of the two actuators must be connected in parallel to control the switching on and the speed of the ventilation electric motor.



LEGEND
1 chiller
2 boiler
3 cooling actuator
4 heating actuator
5 4-tube fan coil

NOTE
If a fan-coil is used in heating systems the fan must not turn when the water is cold, to avoid cooling the room instead of heating it. Some fan-coils have a water temperature sensor to perform this function. If a fan-coil without sensor is used an efficient solution is that of using an immersion thermostat to be installed on the water return tube. The thermostat contact commands a remote switch to which the fan-coil power supplies are connected.

Cooling actuator configuration

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]	RL1/C1	RL2/C2	RL3/C3	RL4/C4
2	8	8	8	8	5	Valve	Minimum speed fan	Average speed fan	Maximum speed fan

Heating actuator configuration

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]	RL1/C1	RL2/C2	RL3/C3	RL4/C4
2	8	8	8	8	6	Valve	Minimum speed fan	Average speed fan	Maximum speed fan

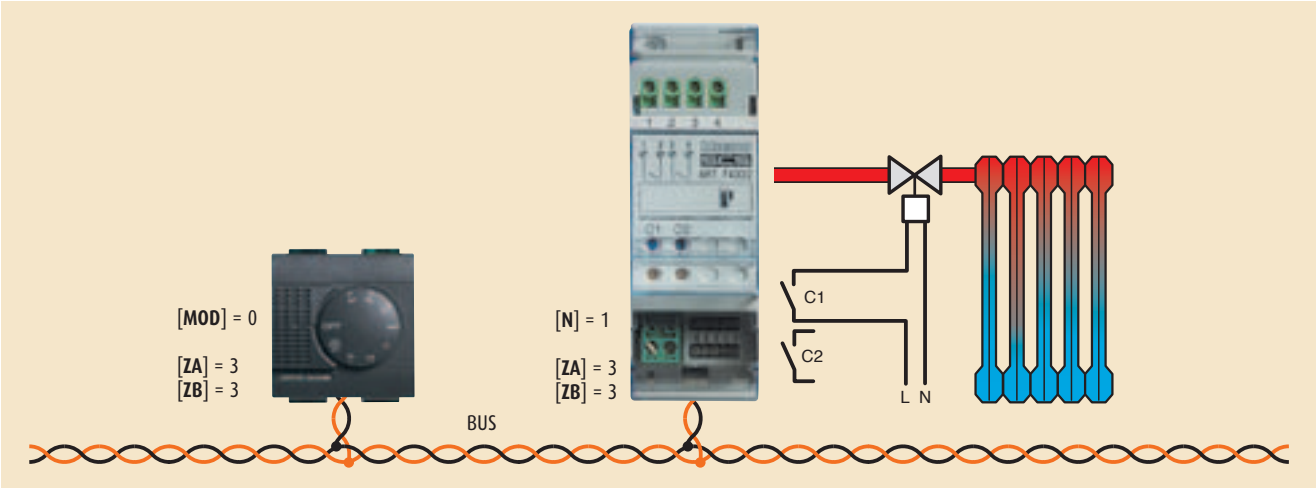
Quick configuration

If the Temperature control function is used to manage a simple system there is no need to interact with the control unit via "Configure zones" in the "Maintenance" menu – just insert the configurators in the devices. A simple system is defined as a system which for each zone has just one actuator for heating and/or one actuator for cooling.
In essence a simple zone has an actuator which only controls ON/OFF loads (solenoid valves, pumps, single-speed fan-coils and electric radiators). Only one circulation pump can be operated for the whole system. The sensor is always configured by inserting two configurators which identify the number of the zone controlled in sockets **[ZA]** and **[ZB]**. If necessary socket **[SLA]** can also be configured to define the master or slave function, socket **[P]** for the pump management mode and socket **[DEL]** for the pump switching on delay. Configuring socket **[MOD]** defines whether the zone manages a heating, cooling or mixed system.
Depending on the function required, the corresponding actuator must be configured, as well as the sensor **[MOD]** socket. For the configuration operation follow the procedure described below.

HEATING ONLY ZONE

Sensor configuration:
- insert configurator **0** in socket **[MOD]**;
- insert the configurators corresponding to the zone number in sockets **[ZA]** and **[ZB]**.

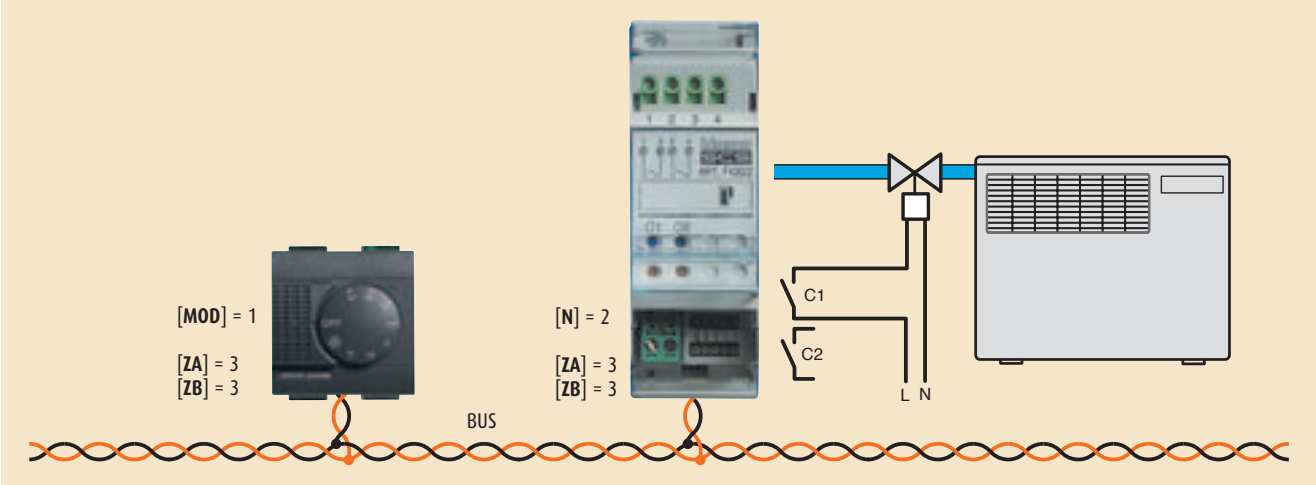
Actuator configuration:
- insert configurator **1** in socket **[N]**;
- insert the configurators corresponding to the zone number (the same as those inserted in the sensor) in sockets **[ZA]** and **[ZB]**.



COOLING ONLY ZONE

Sensor configuration:
- insert configurator 1 in socket **[MOD]**;
- insert the configurators corresponding to the zone number in sockets **[ZA]** and **[ZB]**.

Actuator configuration:
- insert configurator 2 in socket **[N]**;
- insert the configurators corresponding to the zone number (the same as those inserted in the sensor) in sockets **[ZA]** and **[ZB]**.



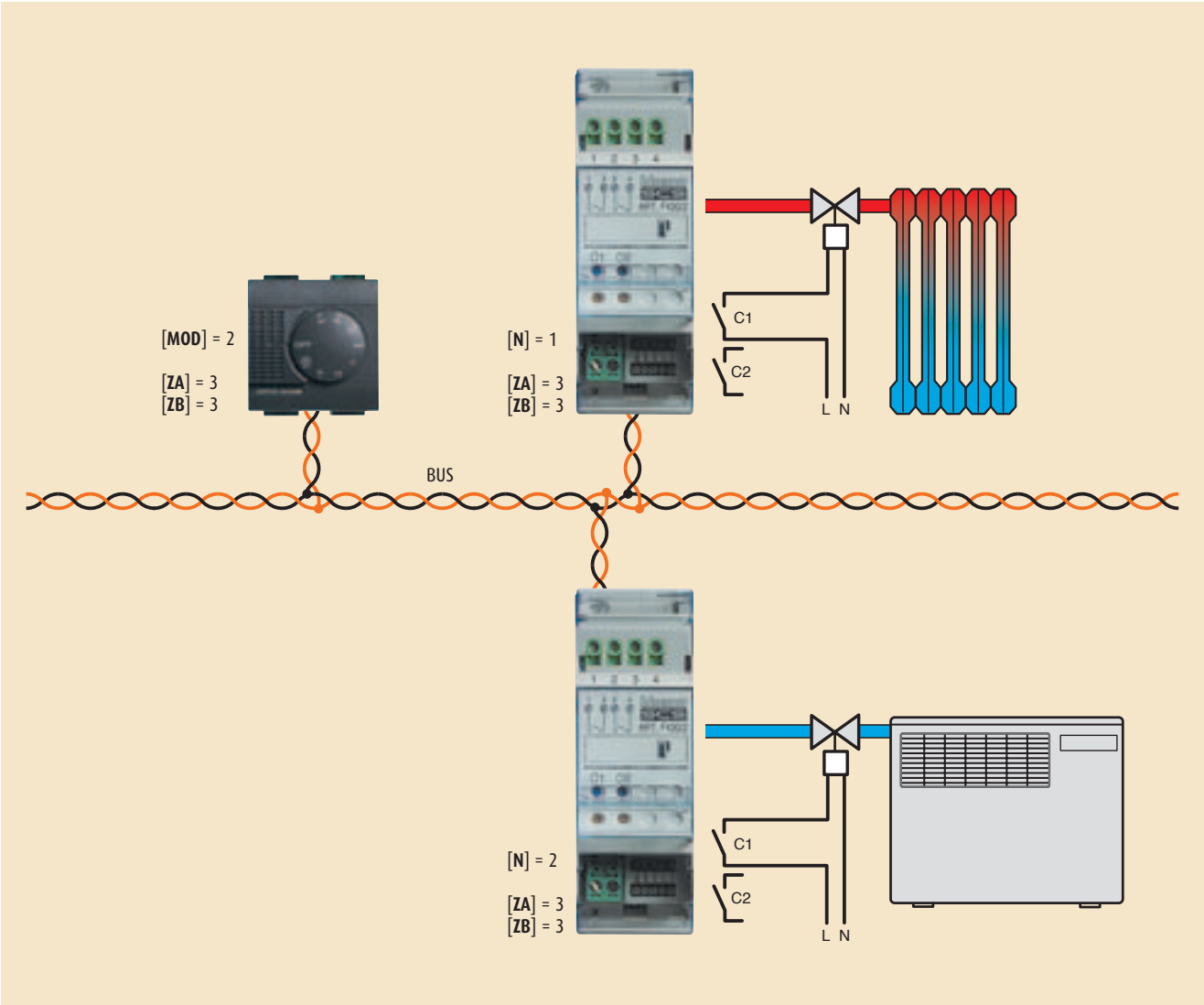
Quick configuration

HEATING AND COOLING ZONE

Sensor configuration:
- insert configurator **2** in socket **[MOD]**;
- insert the configurators corresponding to the zone number in sockets **[ZA]** and **[ZB]**.

Heating actuator configuration:
- insert configurator **1** in socket **[N]**;
- insert the configurators corresponding to the zone number (the same as those inserted in the sensor) in sockets **[ZA]** and **[ZB]**.

Cooling actuator configuration:
- insert configurator 2 in socket **[N]**;
- insert the configurators corresponding to the zone number (the same as those inserted in the sensor) in sockets **[ZA]** and **[ZB]**.



USING THE SENSOR SOCKET [P]

- If control of the circulation pump is not required no configurator should be inserted in the socket.
- If the circulation pump must be controlled either for the heating function or for the cooling function and the same pump will be used for the two functions, insert configurator **1** in **[P]**. Then connect the pump to an actuator configured in zone **00** (**[ZA]** = **0**, **[ZB]** = **0**) and insert configurator **1** in socket **[N]** (see actuator configuration).
- If the pump must only be controlled for the heating function, insert configurator **2** in socket **[P]** and connect the pump to an actuator configured in zone **00** with **[N]** = **1**, (see actuator configuration).
- If the pump must only be controlled for the cooling function, insert configurator **3** in **[P]** and connect the pump to an actuator configured in zone **00** with **[N]** = **2** (see actuator configuration).
- If two separate pumps must be controlled, one for the heating function and one for the cooling function, insert configurator **4** in **[P]**. Then connect the heating pump to an actuator configured in zone **00** with **[N]** = **1**, and the cooling pump to an actuator configured in zone **00** with **[N]** = **2** (see actuator configuration).

PUMP SWITCHING ON DELAY

When the system has a circulation pump managed by the Temperature control function, it may be necessary to insert a configurator in the **[DEL]** socket of the temperature sensor as well. This operation is only performed if the pump is to switch on with a certain delay after the zone valves open. This choice depends on the type of valve installed and allows switching on the pump only when the valve is completely open.
Insert the configurator corresponding to the delay required in the **[DEL]** socket. In this case the number shown on the configurator indicates the time in minutes. If configurator **3** is inserted in **[DEL]**, after closing the relay which commands valve opening, the sensor waits for 3 minutes before switching on the pump.
A delay of a maximum of nine minutes can be configured, depending on the time the valves need to open. Refer to the technical specifications declared by the solenoid valve manufacturer to find out the opening time.

Configuration of socket **[P]** for a system with **one circulation pump** for the two **heating and cooling** functions.

Configuration of socket **[P]** for a system with **one circulation pump** for the **heating** function only.

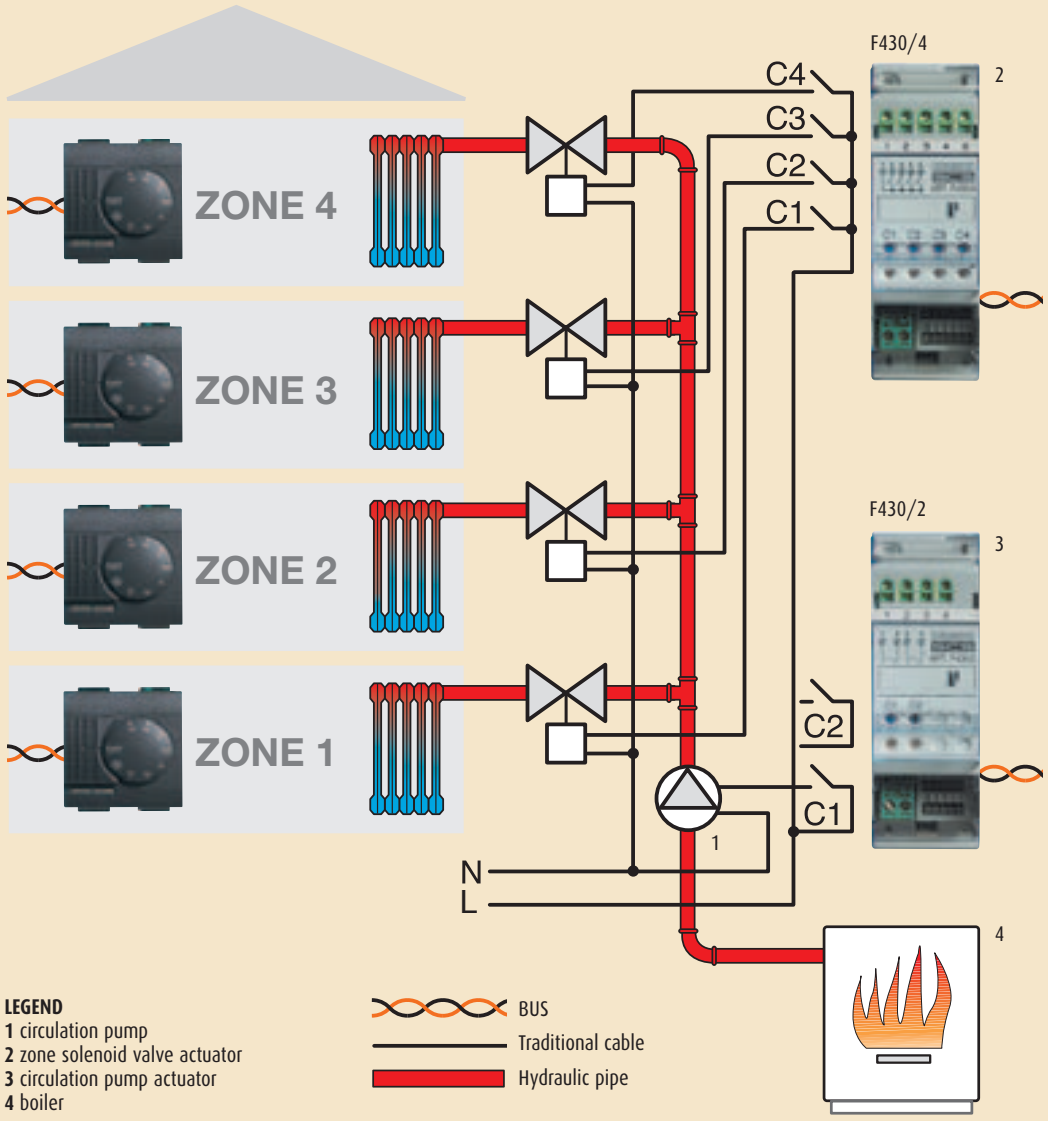
Configuration of socket **[P]** for a system with **one circulation pump** for the **cooling** function only.

Configuration of socket **[P]** for a system with **two separate pumps** one for **heating** and one for **cooling**.

Application examples

SYSTEM DIAGRAM

4-zone large house with heating using radiators



SENSOR CONFIGURATION

Sensor zone 1

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	1	2			

Sensor zone 2

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	2	2			

Sensor zone 3

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	3	2			

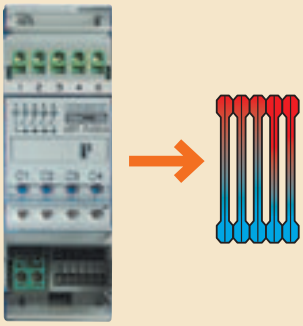
Sensor zone 4

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	4	2			

[MOD] = not configured: just one actuator for heating in each zone

[P] = 2: heating only

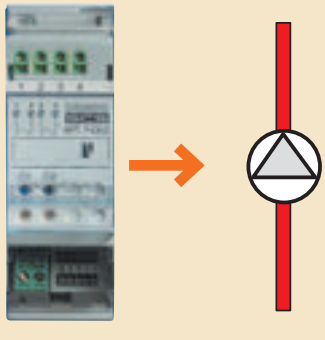
ACTUATOR CONFIGURATION



Zone actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	1	2	3	4	1

[N] = 1: heating actuator



Circulation pump actuator

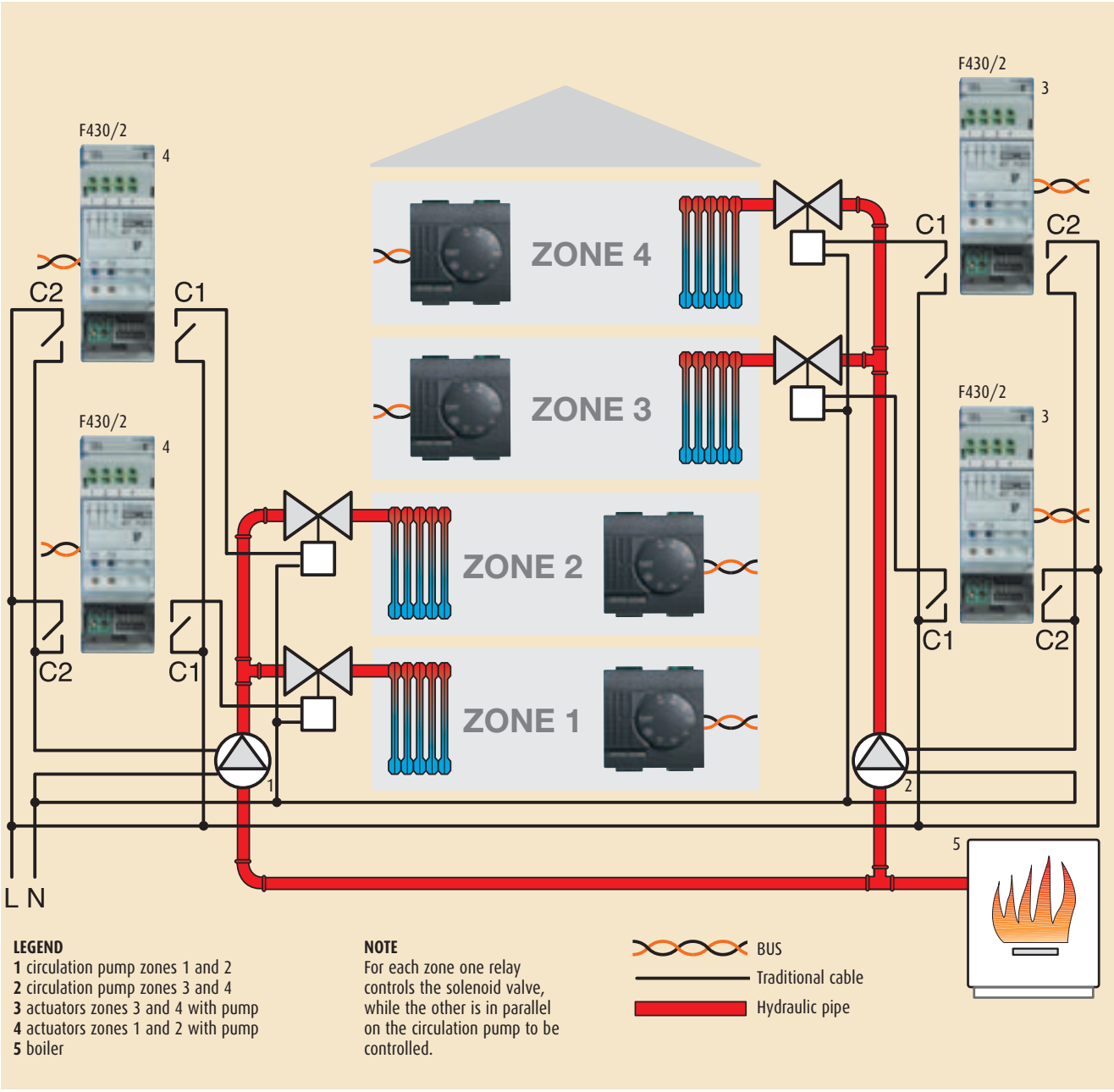
[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	0	1	OFF	—

[N1] = 1: heating circulation pump

Application examples

SYSTEM DIAGRAM

4-zone large house with heating using 2 pumps with solenoid valves without limit switches, and radiators.

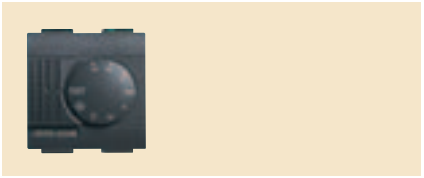


LEGEND
1 circulation pump zones 1 and 2
2 circulation pump zones 3 and 4
3 actuators zones 3 and 4 with pump
4 actuators zones 1 and 2 with pump
5 boiler

NOTE
For each zone one relay controls the solenoid valve, while the other is in parallel on the circulation pump to be controlled.

BUS
Traditional cable
Hydraulic pipe

SENSOR CONFIGURATION



Sensor zone 1

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	1		CEN		

Sensor zone 2

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	2		CEN		

Sensor zone 3

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	3		CEN		

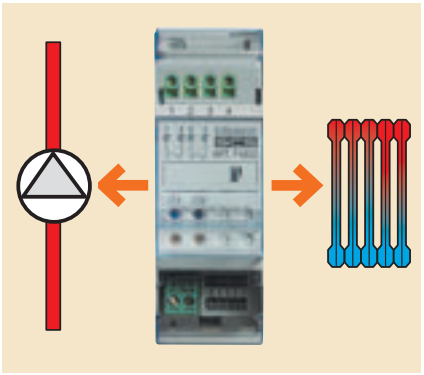
Sensor zone 4

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	4		CEN		

[MOD] = CEN: there is more than one actuator per zone

[P] = not configured: circulation pumps managed by actuators but with traditional wiring

ACTUATOR CONFIGURATION



Zone 1 actuator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	1	1	1	2

Zone 2 actuator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	2	1	2	2

Zone 3 actuator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	3	1	3	2

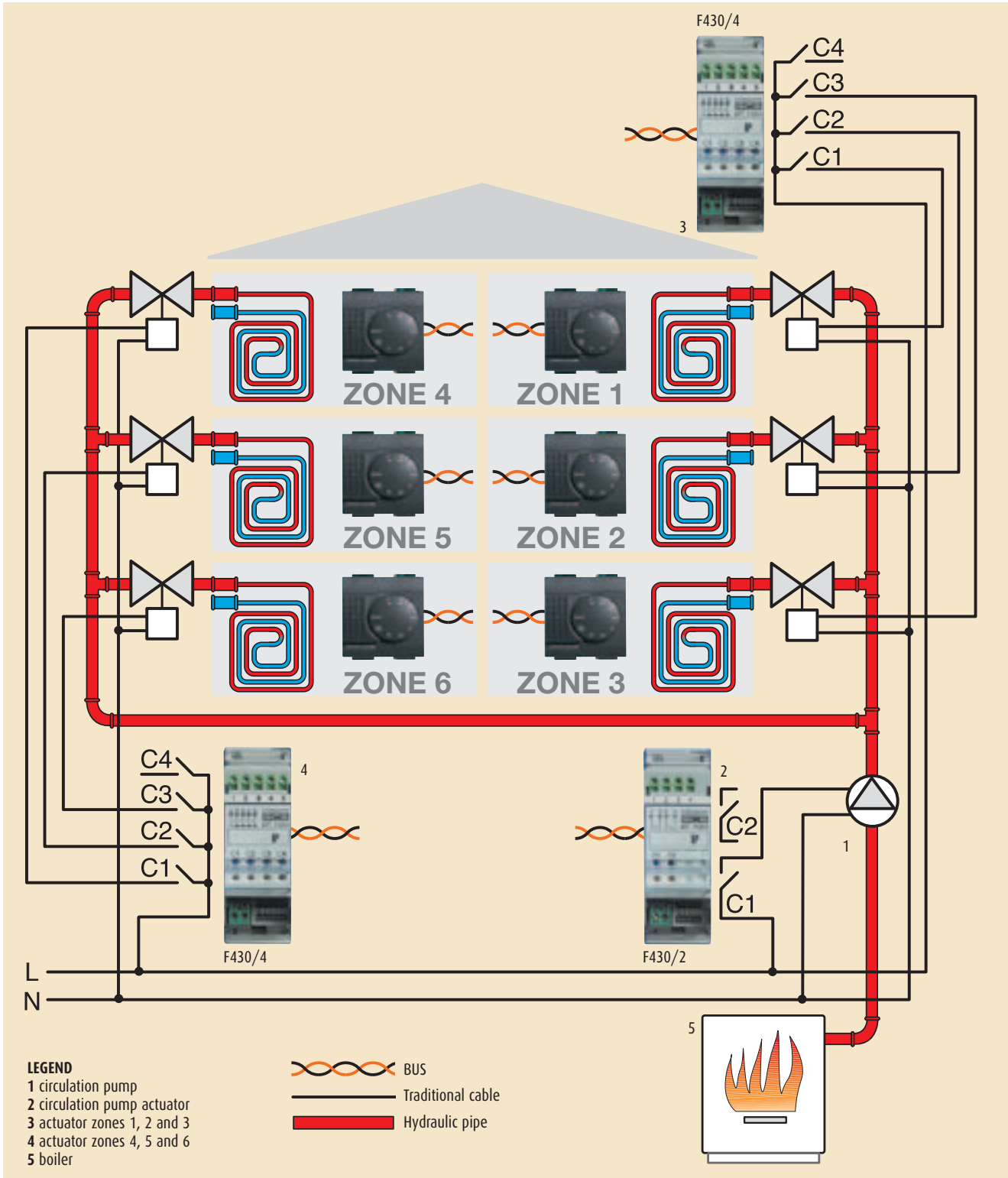
Zone 4 actuator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	4	1	4	2

Application examples

SYSTEM DIAGRAM

6-zone large house with heating using radiant panels.



SENSOR CONFIGURATION

Sensor zone 1

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	1	2			

Sensor zone 2

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	2	2			

Sensor zone 3

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	3	2			

Sensor zone 4

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	4	2			

Sensor zone 5

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	5	2			

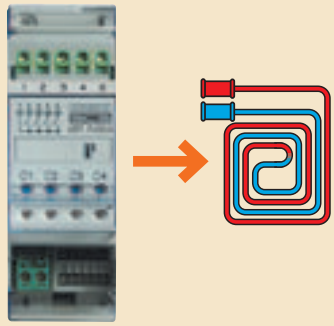
Sensor zone 6

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	6	2			

[MOD] = not configured: just one heating actuator in each zone

[P] = 2: heating only

ACTUATOR CONFIGURATION



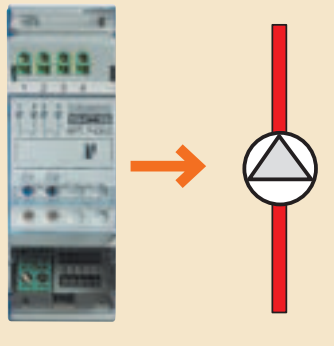
Zone 1, 2 and 3 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	1	2	3	OFF	1

Zone 4, 5 and 6 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	4	5	6	OFF	1

[N] = 1: heating actuator



Circulation pump actuator

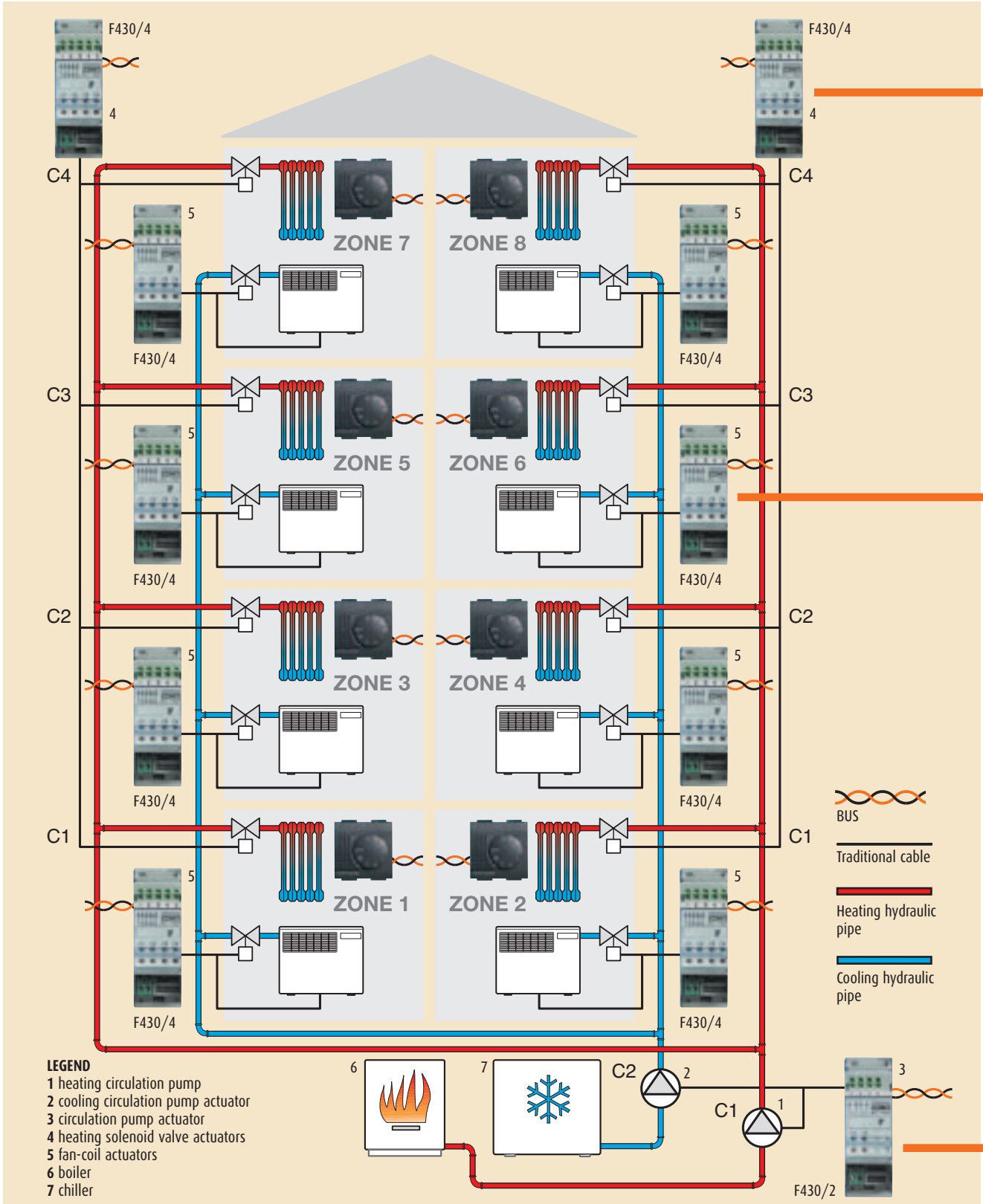
[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	0	1	OFF	—

[N1] = 1: heating circulation pump

Application examples

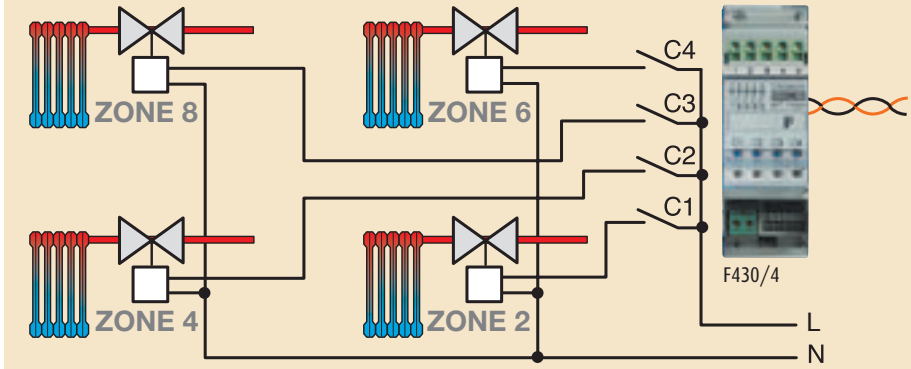
SYSTEM DIAGRAM

8-zone large house with heating using radiators and fan-coil cooling.



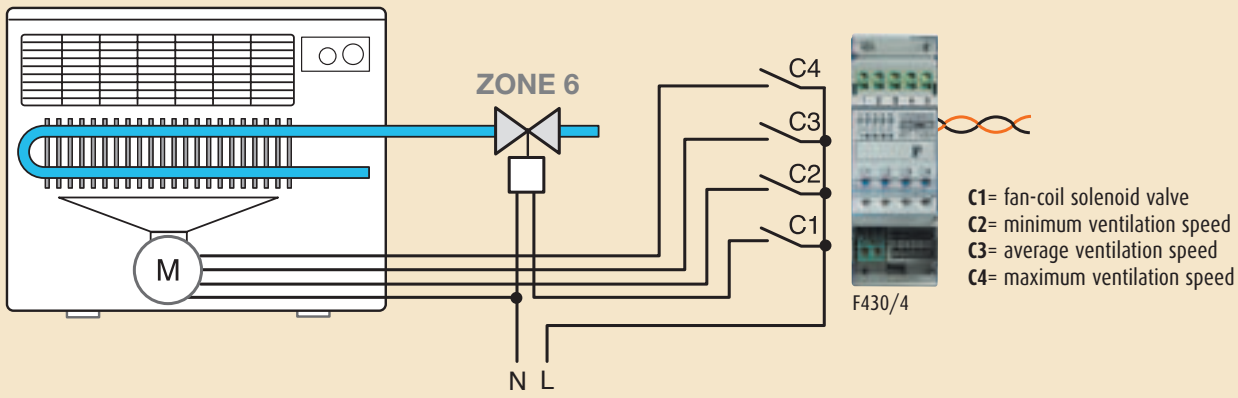
HEATING

Wiring diagram for connecting the solenoid valves of zones 2, 4, 6 and 8 to the heating actuator. To control zones 1, 3, 5 and 7 replicate the same connection between the solenoid valves and the corresponding actuator. The configuration must be made correctly, maintaining the correlation between the actuator contact and the address of the zone to be controlled. In the example given here, zone 2 is controlled by contact C1 configured with **[ZA]** = 0 and **[ZB]** = 2.



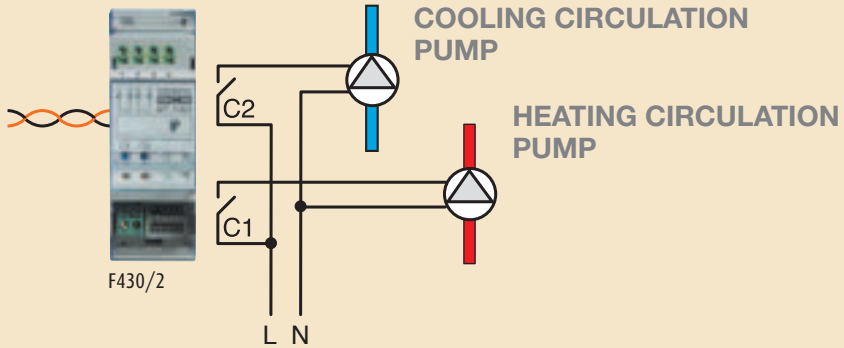
COOLING

Wiring diagram for connecting the fan-coil to the actuator for zone 6 cooling. To control the fan-coils belonging to zones 1, 2, 3, 4, 5, 7 and 8 replicate the same connection, correctly configuring the actuator corresponding to the zone as indicated in the configuration tables.



CIRCULATION PUMPS

Wiring diagram for connecting the circulation pumps to the corresponding actuator. The pumps of the two systems, heating and cooling, are controlled by a single actuator.



Application examples

SENSOR CONFIGURATION

[MOD] = CEN: there are three-speed heating coils

[P] = 4: two separate pumps, one for cooling and one for heating

Sensor zone 1

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	1	4	CEN		

Sensor zone 2

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	2	4	CEN		

Sensor zone 3

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	3	4	CEN		

Sensor zone 4

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	4	4	CEN		

Sensor zone 5

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	5	4	CEN		

Sensor zone 6

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	6	4	CEN		

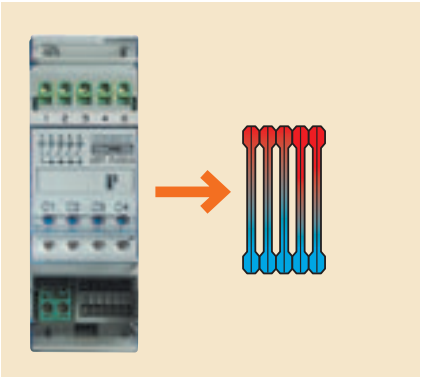
Sensor zone 7

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	7	4	CEN		

Sensor zone 8

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	8	4	CEN		

HEATING SYSTEM ACTUATOR CONFIGURATION



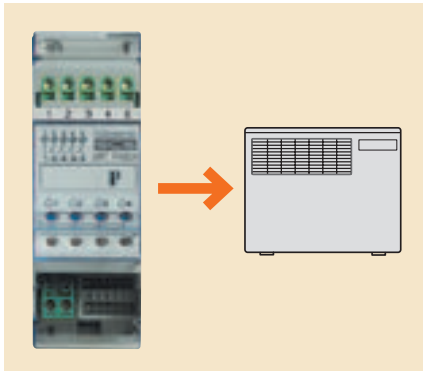
Zone 2, 4, 6 and 8 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	2	4	6	8	1

Zone 1, 3, 5 and 7 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	1	3	5	7	1

COOLING SYSTEM ACTUATOR CONFIGURATION



Zone 1 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	1	1	1	1	2

Zone 2 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	2	2	2	2	2

Zone 3 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	3	3	3	3	2

Zone 4 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	4	4	4	4	2

Zone 5 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	5	5	5	5	2

Zone 6 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	6	6	6	6	2

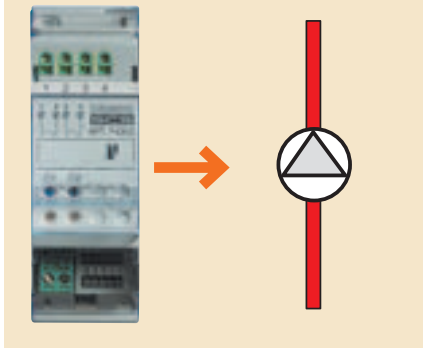
Zone 7 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	7	7	7	7	2

Zone 8 cooling actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	8	8	8	8	2

CIRCULATION PUMP ACTUATOR CONFIGURATION



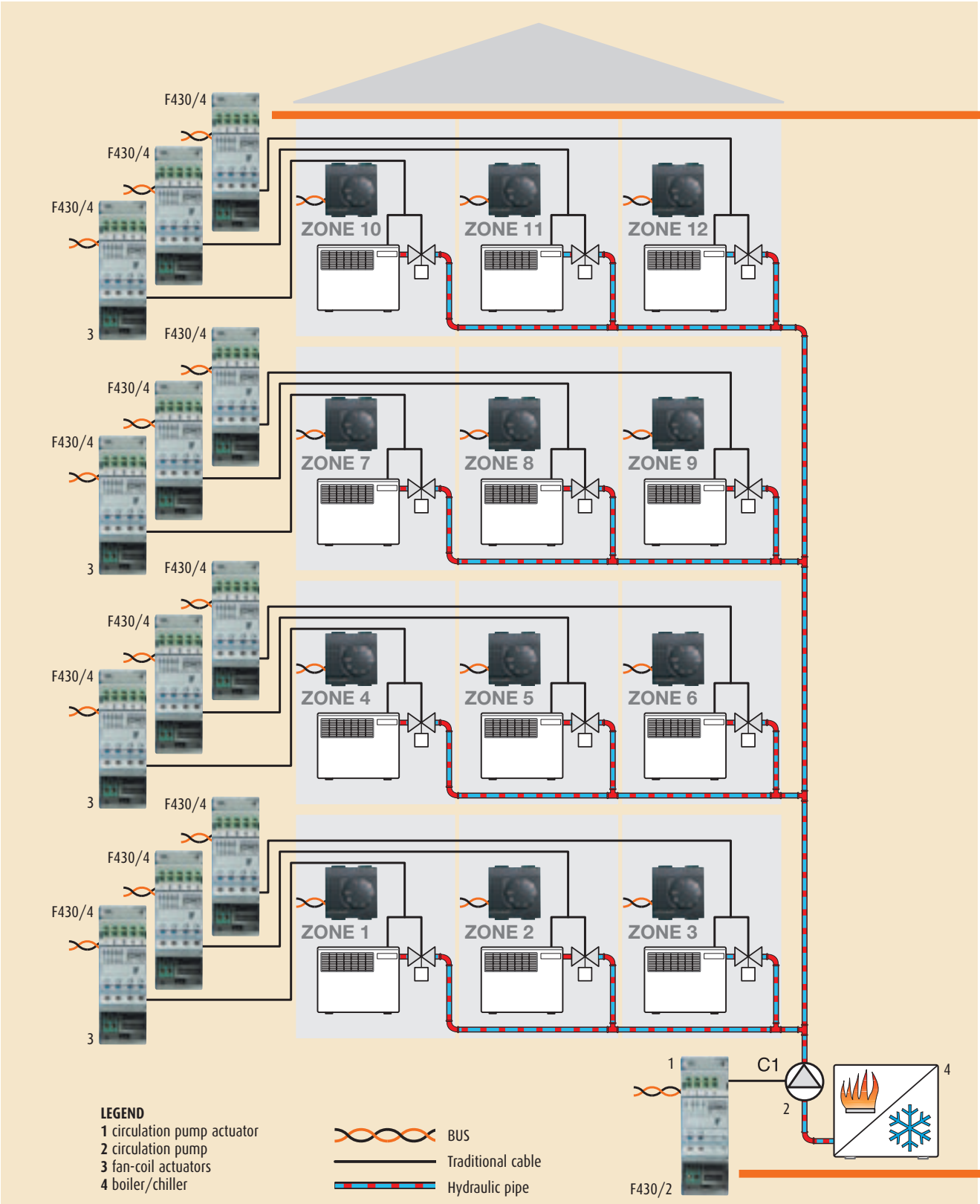
Circulation pump actuator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	0	1	OFF	—

Application examples

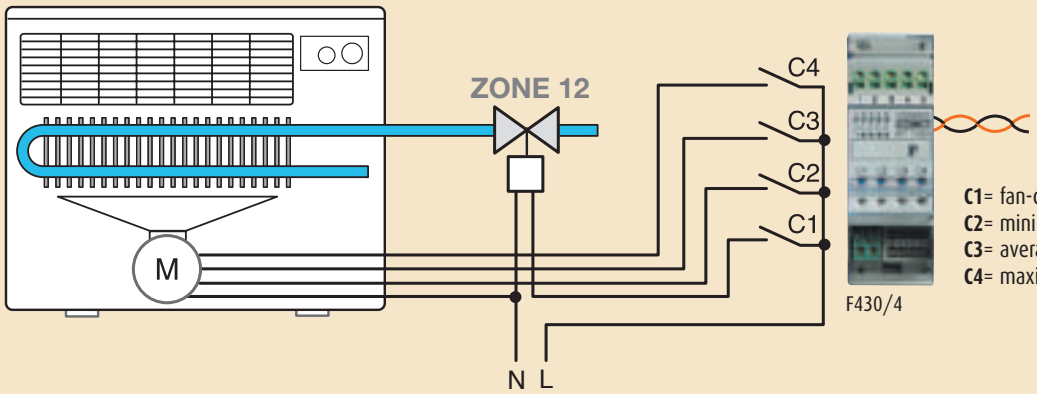
SYSTEM DIAGRAM

Commercial sector, 12 zones, with fan-coil with two tubes and three speeds, single system for heating and cooling.



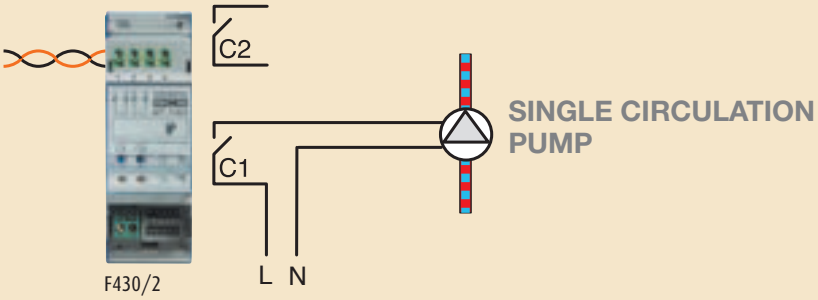
HEATING AND COOLING

Wiring diagram for connecting the fan-coil to the actuator for zone 12 heating/cooling. To control the fan-coils belonging to all the other zones replicate the same connection, correctly configuring the actuator corresponding to the zone as indicated in the configuration tables.



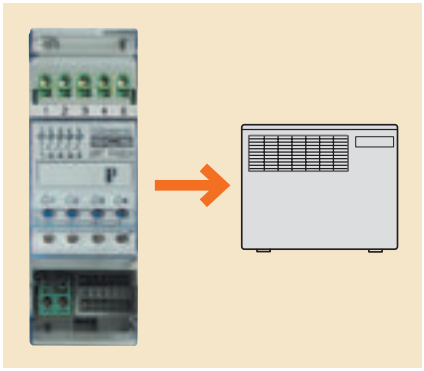
CIRCULATION PUMPS

Wiring diagram for connecting the circulation pumps to the corresponding actuator. A system which can provide both heating and cooling is controlled by a single pump.



Application examples

HEATING SYSTEM FAN-COIL ACTUATOR CONFIGURATION



Zone 1 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	1	1	1	1	1

Zone 2 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	2	2	2	2	1

Zone 3 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	3	3	3	3	1

Zone 4 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	4	4	4	4	1

Zone 5 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	5	5	5	5	1

Zone 6 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	6	6	6	6	1

Zone 7 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	7	7	7	7	1

Zone 8 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	8	8	8	8	1

Zone 9 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
0	9	9	9	9	1

Zone 10 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
1	0	0	0	0	1

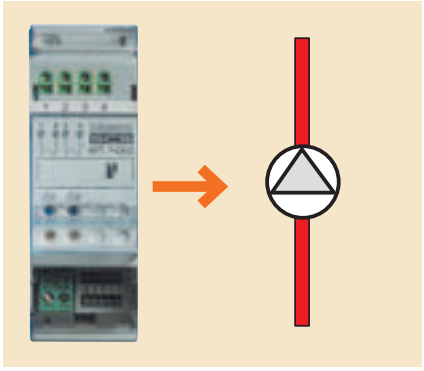
Zone 11 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
1	1	1	1	1	1

Zone 12 actuator

[ZA]	[ZB1]	[ZB2]	[ZB3]	[ZB4]	[N]
1	2	2	2	2	1

CIRCULATION PUMP ACTUATOR CONFIGURATION



Circulation pump actuator

[ZA]	[ZB1]	[N1]	[ZB2]	[N2]
0	0	1	OFF	—

SENSOR CONFIGURATION

[MOD] = CEN: control of the three fan-coil speeds

[P] = 1: 1: control of a single pump for cooling and one for heating

Sensor zone 1

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	1	1	CEN		

Sensor zone 2

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	2	1	CEN		

Sensor zone 3

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	3	1	CEN		

Sensor zone 4

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	4	1	CEN		

Sensor zone 5

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	5	1	CEN		

Sensor zone 6

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	6	1	CEN		

Sensor zone 7

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	7	1	CEN		

Sensor zone 8

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	8	1	CEN		

Sensor zone 9

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
0	9	1	CEN		

Sensor zone 10

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
1	0	1	CEN		

Sensor zone 11

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
1	1	1	CEN		

Sensor zone 12

[ZA]	[ZB]	[P]	[MOD]	[SLA]	[DEL]
1	2	1	CEN		

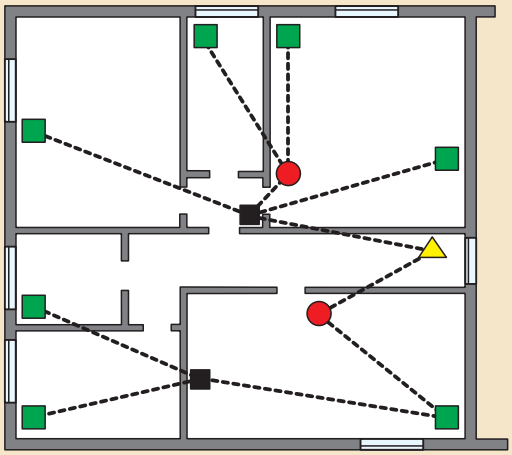
General installation rules

PREPARING THE BUILDING

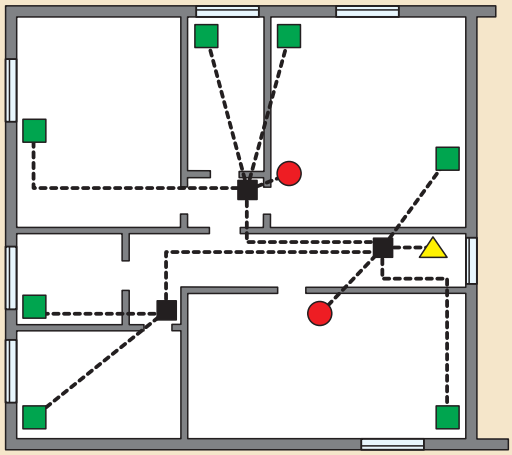
Installation of Temperature control items does not interfere with the concepts of traditional systems but requires taking some precautions in the design phase.
The BUS cable can share the trunking used for the traditional energy line, made with traditional concealed trunking or with trunking for wall mounting. This solution allows quicker installation and less work on the wall structure. Regardless of the installation solutions adopted, it must be remembered that if a generic telephone pair is used, it must be kept separate from the power line. This limitation does not apply when using the sheathed BUS cable supplied by Bticino, which has 300/500 V insulation voltage. The same conduits can thus be used for the power cables and the BUS line. It is good practice to provide junction boxes in the home for the electric power services and for the star distribution of the BUS cable to the various devices. Whenever the radiator valves are to be operated or fan-coils controlled, the electric power services and BUS cable should also arrive near the heat exchangers.

If the zone interceptions, made by means of solenoid valves or pumps installed immediately after the collector, are in the same box, all the actuators should be collected in a unit which should be installed near the box itself.
Provide device-holder boxes for the sensors with a capacity of two Living International/Light/Light Tech modules. Remember that there is a choice of two types of installation for the box: flush-mounted or wall-mounted. In both cases the installation must be at a height of about 1.5 metres from the floor, away from the heat exchangers and sources which could affect the temperature reading.

EXAMPLE OF BUS AND ELECTRIC POWER DISTRIBUTION IN A BUILDING



Star



Mixed

power supply
actuator
sensor
junction box

MAXIMUM NUMBER OF DEVICES

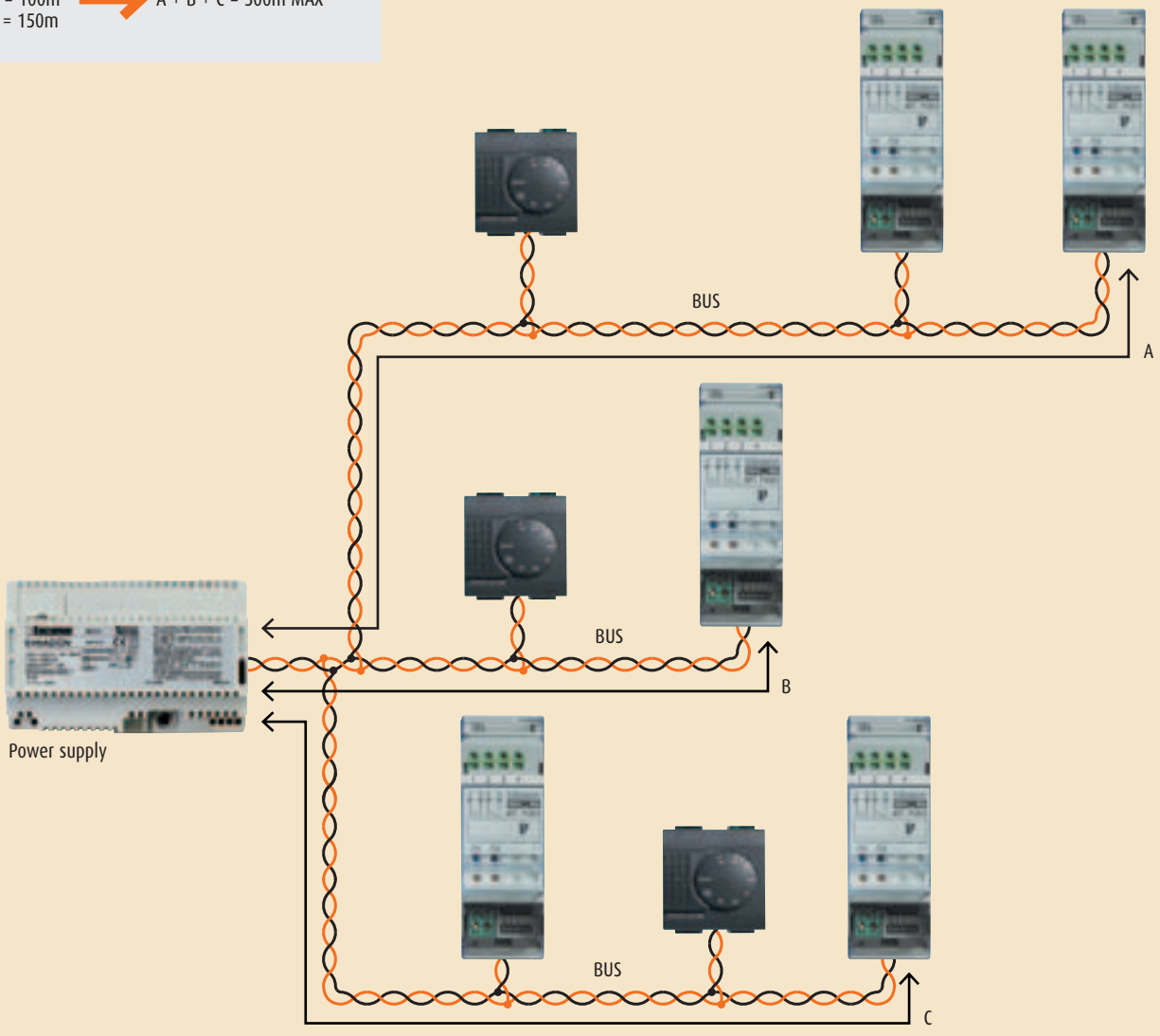
A system can manage up to 99 zone addresses. Up to nine addresses dedicated to the actuators can be managed for each zone. The maximum number of devices which can be connected to the BUS also depends on their total absorption and the distance between the connection point and the power supply. The power supply can supply up to 1.2 A and the maximum number of devices which can be connected to the BUS is determined by summing the absorption of all the items and making sure that the total does not exceed the capacity of the power supply. For the calculations mentioned above, refer to the "Maximum absorption" parameter expressed for each device in the "Technical features" section of this guide.

When calculating the absorptions the availability of current as a function of the length of the BUS cable must also be considered. During the sizing therefore respect the following rules:

- the connection between the power supply and the furthest device must not be more than 250 m long;
- the total length of the connections must not be more than 500m;
- the maximum current available at the end of a 250 m long telephone cable is 400 mA, while for a BUS cable item L4669 it is 600 mA;
- for best division of the currents on the BUS line the power supply should be installed in the middle.

MAXIMUM DISTANCES OF THE BUS CABLE

A = 250m
B = 100m
C = 150m
→ A + B + C = 500m MAX



General installation rules

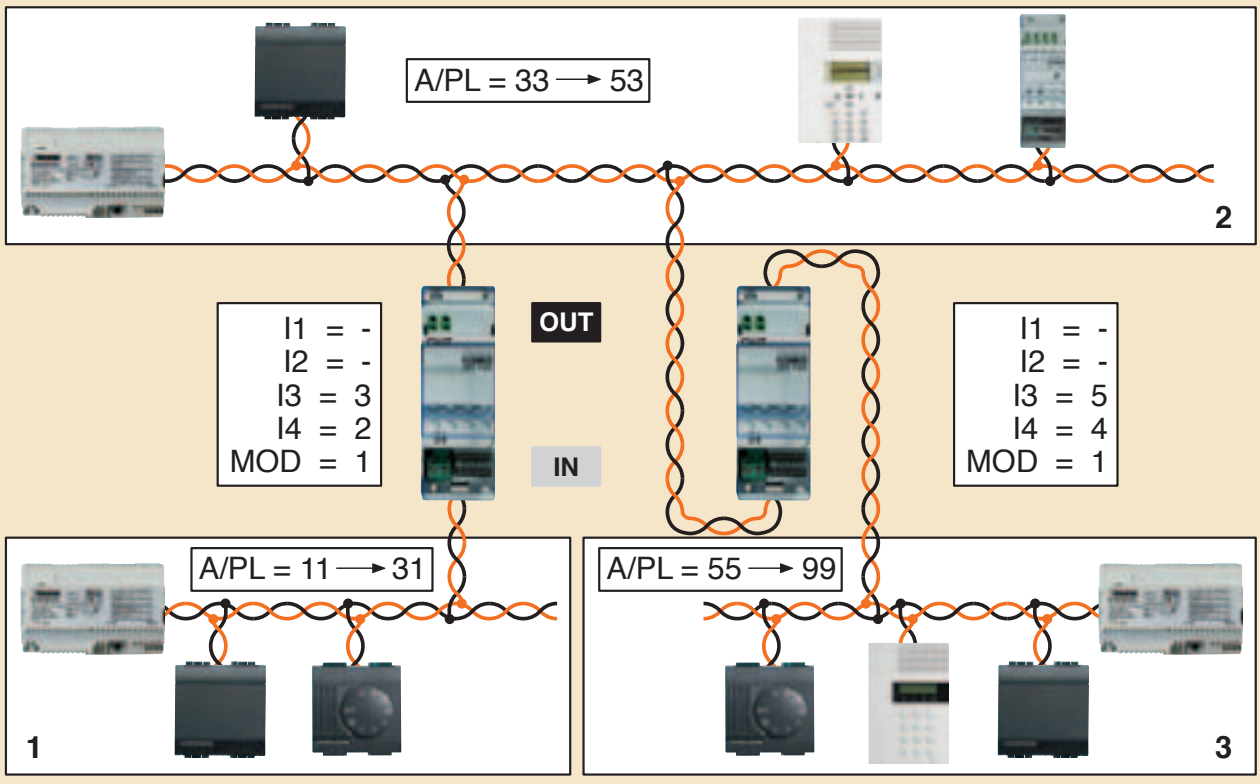
EXTENSIVE SYSTEMS

In large systems or systems which have current absorption greater than the limit of 1200 mA supplied by the power supply item E46ADCN, the system must be divided into several sections each supplied with its own power supply and connected by means of interface item F422 configured in “physical expansion” mode. It must be shown that the system limits, in terms of absorption and maximum wiring distance, as shown in this guide, are applied for each bus. A system made up of two or more buses, connected by interfaces configured in “physical expansion” mode, cannot therefore be supplied with just one power supply item E46ADCN, even if the number and types of component connected to the system would not involve exceeding the maximum expected absorption (1200 mA). To produce the “physical expansion” mode interface item F422 must be configured by inserting numerical configurator 1 in the MOD position. Positions 13 and 14 of the interface must be configured as a function of the two modes of use of the interface itself as indicated below:

a. If a bus system with only Temperature control devices must be extended, positions 13 and 14 of the interface must be configured with addresses 13 = 1 – 9 and 14 = 1 – 9 completely independent from the Temperature control device addresses;

b. If a bus system with Automation and Temperature control devices must be extended, positions 13 and 14 must be configured as a function of the configuration of the Automation devices in the two connected systems. Referring to the illustration, let us suppose that 13 = 3, 14 = 2:
- on the input bus (IN) the Automation device addresses must be between A = 1 / PL = 1 and A = 3 / PL = 1;
- on the output bus (OUT) the addresses must be between A = 3 / PL = 3 and A = 9 / PL = 9 or the address of the next interface. It should be stressed that all the Temperature control devices on the system section must be configured totally independently of the Automation device configuration. In any case no automation device must be configured with the same address (A, PL) as interface F422 (13, 14).

SYSTEM EXAMPLE

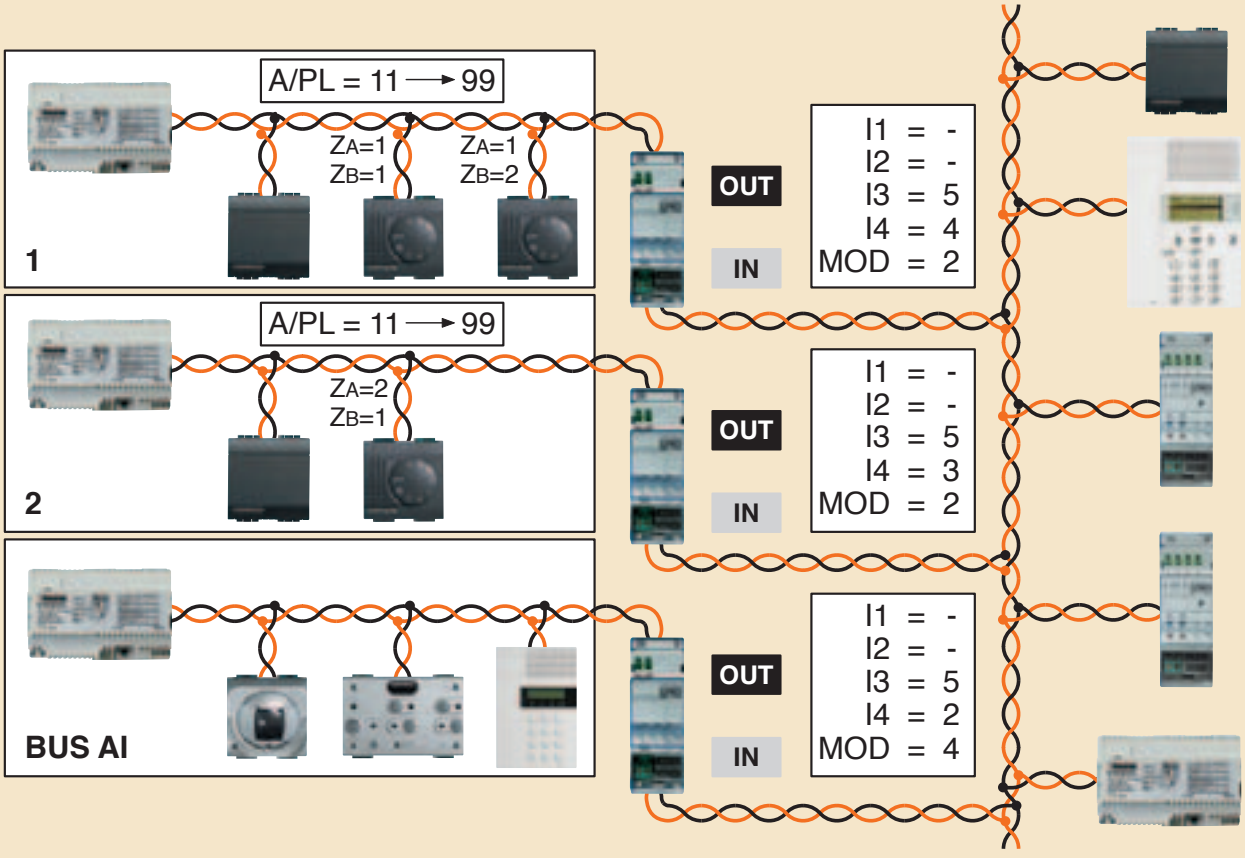


COMBINING WITH OTHER FUNCTIONS

The Temperature control function devices can share the same BUS cable as other My Home automation and emergency management applications (grey cable). If there is already a stable cable with the automation or power management BUS the Temperature control items can be added at any point in the system, after installing a box item 503E for the control unit item 3550, one or more boxes positioned at a height of 1.5 m for each temperature sensor and a unit with enough room for the DIN actuators.
The above is also valid if the pre-existing My Home system has several Automation systems connected using interfaces item F422 configured in the "logic expansion" mode.

For systems with "logic expansion" there is no installation limitation for the Temperature control devices, which can be installed at any point in the system. Thus, for correct system sizing, one only need check the length of the connections made with the BUS cable and the total device absorptions as specified in this document. For systems which also have the burglar alarm function, the Temperature control must not be installed on the same bus as the burglar alarm, but there must be an F422 interface between the two buses.

SYSTEM EXAMPLE



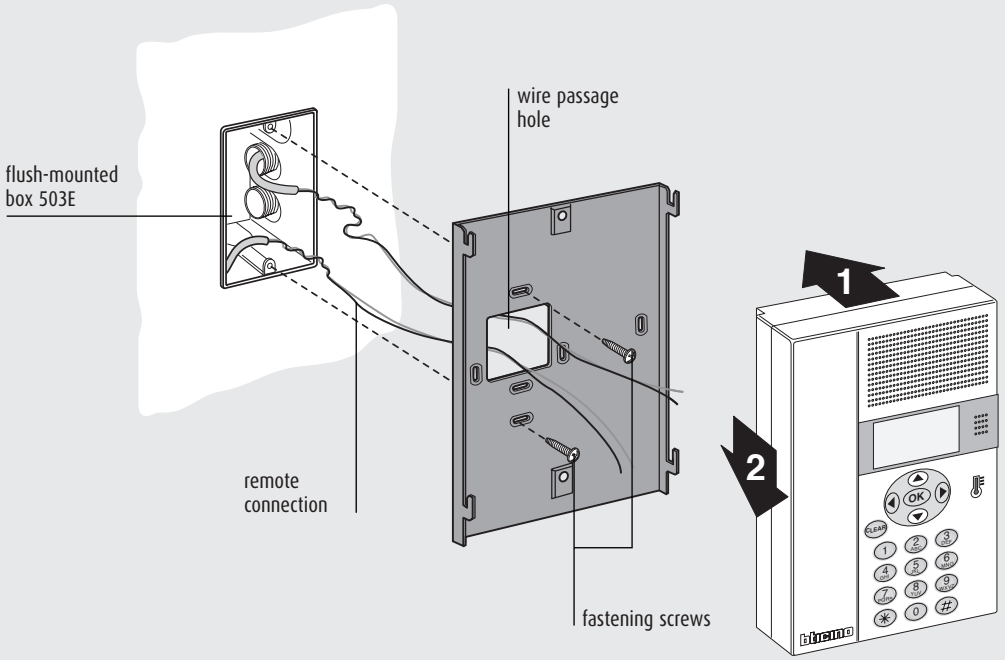
General installation rules

TEMPERATURE CONTROL UNIT ITEM 3550

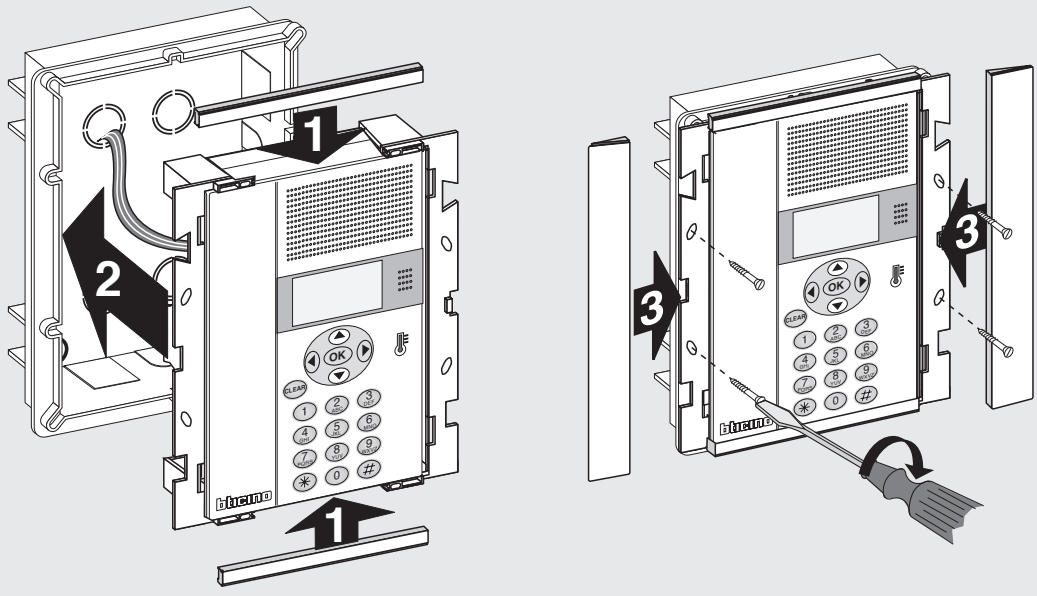
The Temperature control unit can be installed in two different ways: wall mounted or flush mounted. Wall installation requires the use of the metal base fastened to the wall by means of flush-mounting box 503E.

By means of the trunking the flush-mounting box contains the wires for connection to the BUS and possibly for the remote control. The control unit can also be installed in Multibox series flush-mounted units.

WALL INSTALLATION WITH METAL BASE SUPPLIED



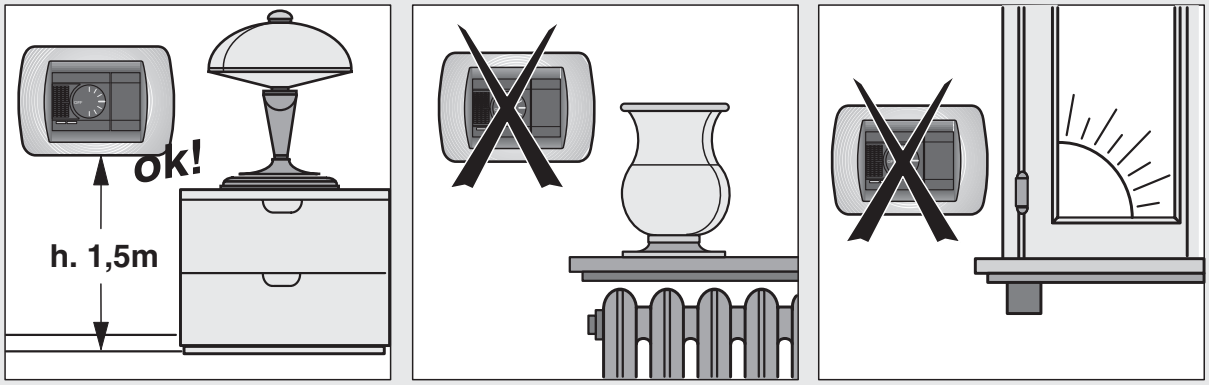
FLUSH-MOUNTED INSTALLATION IN MULTIBOX BOX



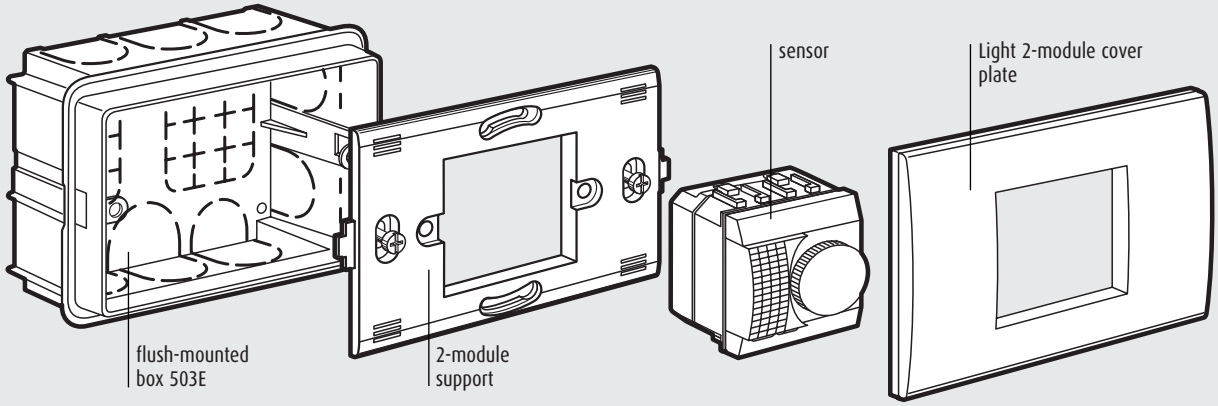
SENSOR ITEM L/N/NT4692

As required the sensor can be installed in either normal flush-mounted or wall-mounted containers. For both solutions the installation height must be about 1.5 metres from the floor and away from zones which could influence the temperature reading. Wall installation may be useful to solve the problem of already existing BUS systems which cannot be expanded. This type of container avoids the need for wall work and is available in both Living International and Light series. To install the devices in the wall boxes correctly the protection cover on the bottom of the item must be removed. The anti-tamper device should also be removed from the wall-mounted boxes (only useful when using with burglar alarm items).

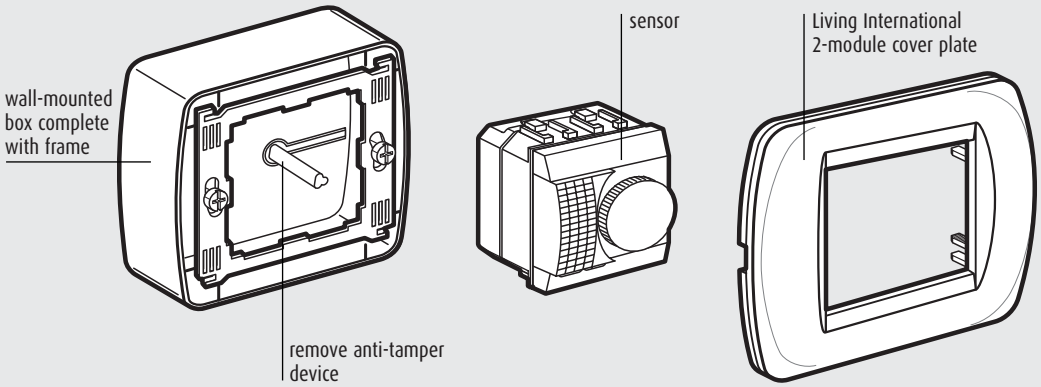
CORRECT MODE OF INSTALLATION



EXAMPLE OF FLUSH-MOUNTED INSTALLATION



EXAMPLE OF WALL-MOUNTED INSTALLATION

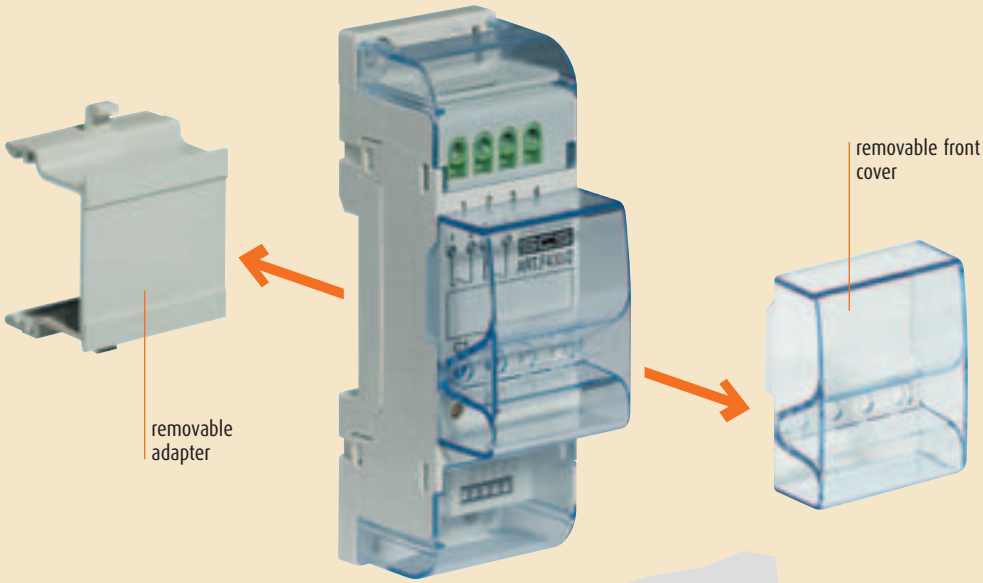


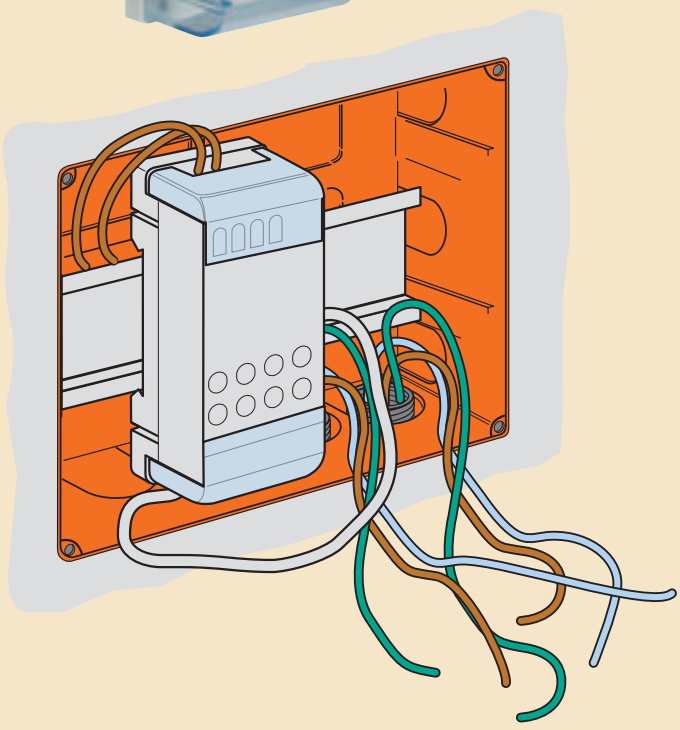
General installation rules

ACTUATORS ITEM F430/2 ITEM F430/4

The actuators are made in two DIN module containers and feature the advantage that the rear adapter and the front cover can be removed so that they take up less room – e.g. to allow installation inside junction boxes.
In installations in units the DIN adapter and the front cover mean that the profile of the actuator can be aligned with that of other DIN modular devices.

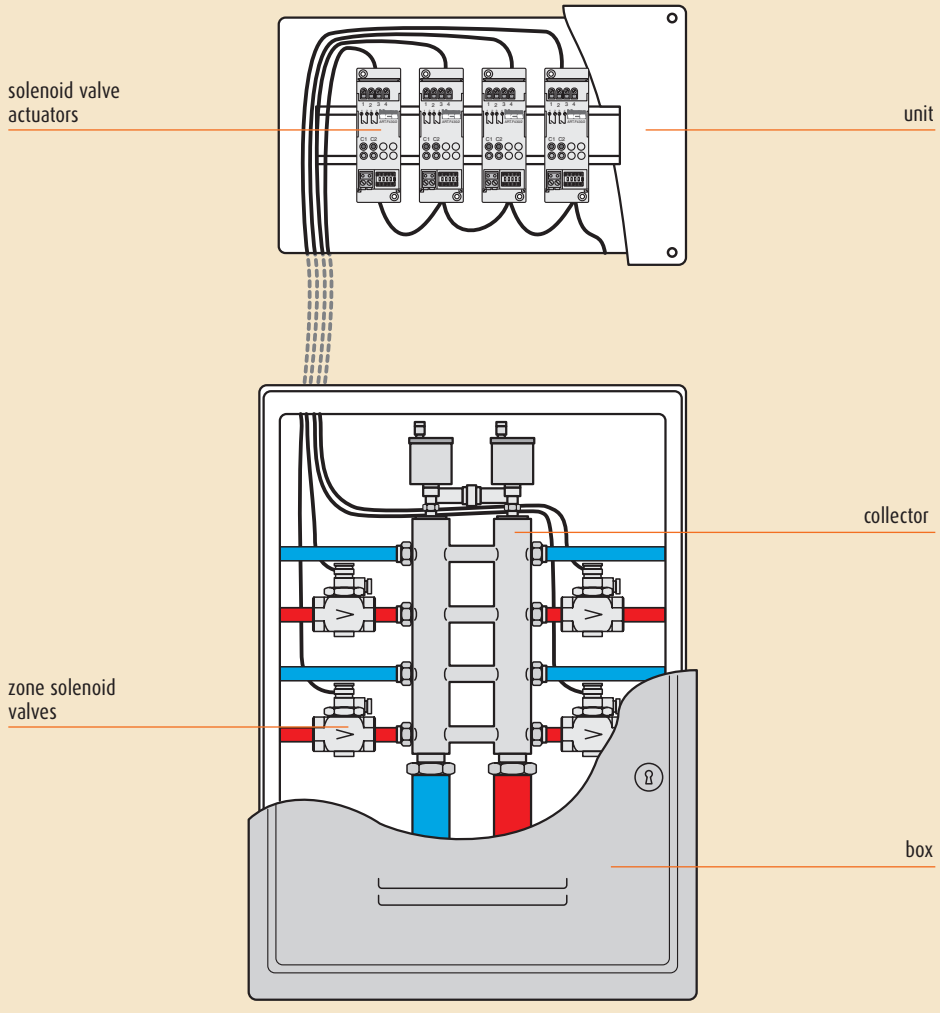
REMOVING ADAPTER AND FRONT COVER FOR INSTALLATION JUNCTION BOXES





INSTALLING THE ACTUATORS IN A UNIT, NEAR THE SOLENOID VALVES AND COLLECTOR

When the zone interceptions are made by means of solenoid valves or pumps installed in the same box as the collector all the actuators should be collected together in a unit which is installed near the box itself.



Catalogue

3550

3507/6

CONTROL UNIT

Item	Description
3550	control unit to manage the temperature control system

BATTERY

Item	Description
3507/6	6V 0.5Ah battery for temperature control unit

L4692

N4692

NT4692

SENSOR

Item	Description
L4692	sensor to regulate the room temperature for heating and
N4692	cooling systems – temperature control field 3 – 40°C –
NT4692	two Living International, Light or Light Tech modules

F430/2

F430/4

ACTUATORS

Item	Description
F430/2	actuator with 2 independent relays – for single and double loads: 6A resistive, 3A motorised valves and pumps – logic interlock of the relays by means of configuration – 2 DIN modules
F430/4	actuator with 4 independent relays – for single, double or mixed loads: 6A resistive, 3A motorised valves, pumps and fan-coils – logic interlock of the relays by means of configuration – 2 DIN modules

E46ADCN

L4669
L4669/500

POWER SUPPLY

Item	Description
E46ADCN	power supply for BUS systems – input 230V a.c. output 27V d.c. SELV – maximum current absorbed 300 mA – maximum current supplied 1.2A version for fastening on DIN rail with size 8 modules

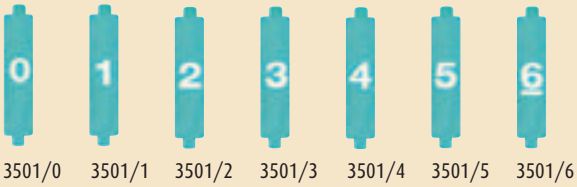
SHEATHED PAIR

Item	Description
L4669	sheathed pair made up of 2 flexible conductors with plaited and unshielded sheath for burglar-alarm system or automation system – insulation 300/500V – corresponding to standards IEC 46-5 and IEC 20-20 – coil length 100 m
L4669/500	as above – in 500 m coil

3515

PULL-OUT TERMINALS

Item	Description
3515	spare pull-out terminals



3501/0 3501/1 3501/2 3501/3 3501/4 3501/5 3501/6

3501/7 3501/8 3501/9 3501/CEN 3501/SLA 3501/OFF

346900

3501K/1

CONFIGURATORS – SINGLE-TYPE 10 PIECE PACKAGE

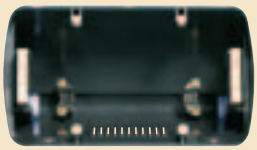
Item	Description
3501/0	configurator 0
3501/1	configurator 1
3501/2	configurator 2
3501/3	configurator 3
3501/4	configurator 4
3501/5	configurator 5
3501/6	configurator 6
3501/7	configurator 7
3501/8	configurator 8
3501/9	configurator 9
3501/OFF	configurator OFF
3501/SLA	configurator SLA
3501/CEN	configurator CEN

CONFIGURATOR KIT

Item	Description
346900	Kit of configurators from 0 to 9
3501K/1	Kit of AUX, GEN, GR, AMB,ON, OFF, O/I, PUL, SLA, CEN, ↑↓, ↑↓M configurators

502LPA

502NPA



504LIV

WALL-MOUNTED BOXES FOR MODULAR DEVICES

Shallow wall-mounted box for wall insulation – fitted with anti-tamper device – 2 modules – complete with frame and, in the Light version, white (LB) cover plate

Item	Series	Fitted with
502LPA	Living International	frame
502NPA	Light - Light Tech	frame + LB cover plate

TABLE DEVICE-HOLDERS

Item	Description
504LIV	table device-holder – 4 Living International modules – complete with frame

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Edition 09/2004